# THE DATASHEET OF

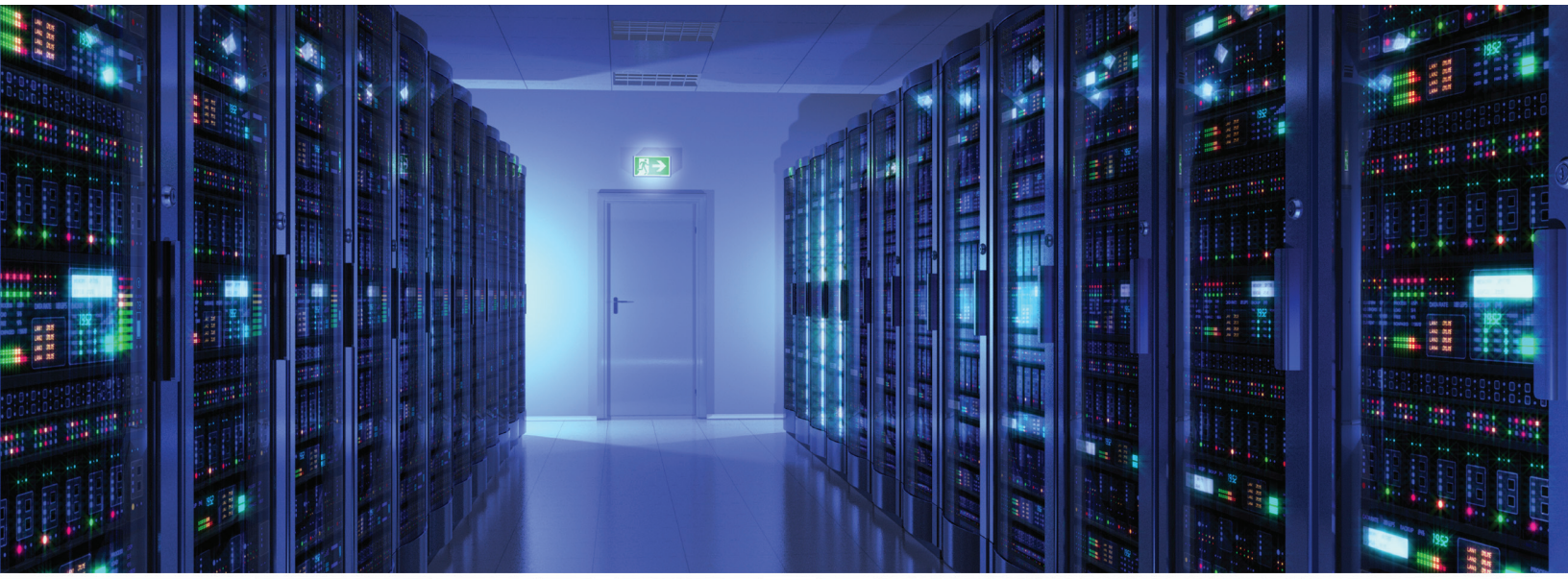
# TC1186-2.6VCT713

Analog and Interface

MICROCHIP

# Analog and Interface Product Selector Guide

Thermal Management • Motor Driver • Power Management
Interface and Networking Peripherals • Linear and Mixed Signal
CO and Smoke Detector ICs



www.microchip.com/analog

# Table of Contents

## Thermal Management



## Motor Drivers



## Position Sensors



## Power Management



## Display and LED Drivers



## High-Voltage Interface



## Linear



## Mixed Signal



## Interface and Networking



## CO and Smoke Detector ICs



## Ultrasound



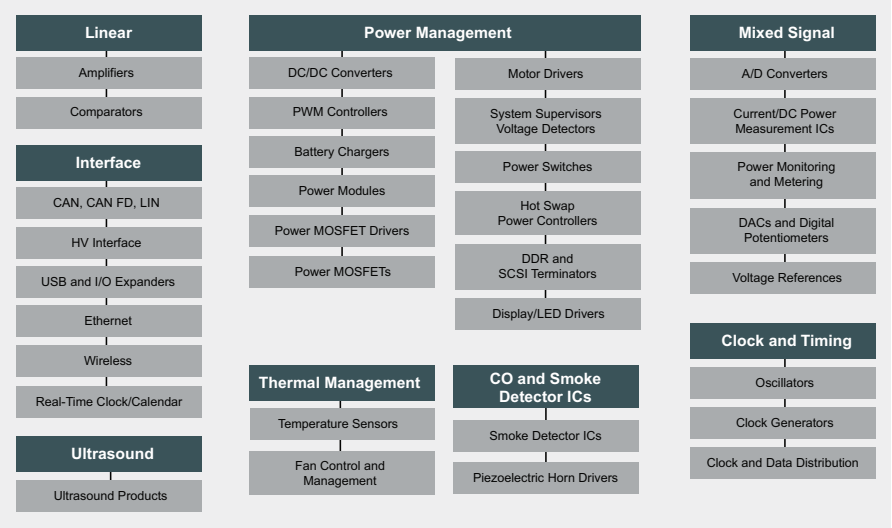
**Note:** New products to this edition are reflected in bold.

## Are You Looking for Complete Analog and Interface Design Solutions?

Microchip's integrated analog technology, peripherals and features are engineered to meet today's demanding design requirements. Our broad spectrum of analog products addresses thermal management, power management, battery management, mixed-signal, linear, interface and safety and security solutions. Combined with Microchip's Intelligent Analog microcontrollers, our extensive analog portfolio can be used in thousands of high-performance design applications in the automotive, communications (wireless), consumer, computing and industrial control markets.

Our broad portfolio of standalone analog and interface devices offers highly integrated solutions that combine various analog functions in space-saving packages and support a variety of bus interfaces. Many of these devices support functionality that enhances the analog features currently available on PIC® MCUs.

### Microchip's Standalone Analog and Interface Portfolio




## Want a Business Partner, Not Just a Vendor?

Successful companies recognize the value of a strategic supplier relationship to help them deliver innovative products to market quickly. They trust their suppliers to furnish quality components for current design opportunities as well as technology road maps and innovative solutions to stay ahead of tomorrow's design trends. Microchip provides low-risk product development, lower total system cost and faster time to market to more than 80,000 of these successful companies worldwide. Headquartered in Chandler, Arizona, Microchip offers outstanding technical support along with dependable delivery and quality.

## Are Quality and Delivery a Concern?

Microchip's quality systems are certified according to the International Organization for Standards/Technical Specification (ISO/TS)-16949:2002 requirements. This demonstrates that our quality systems meet the most stringent industry quality-management system standards, resulting in high-quality semiconductor products. Direct control over manufacturing resources allows shortened design and production cycles. By owning the wafer fabrication facilities and the majority of the test and assembly operations, and by employing proprietary statistical process control techniques, Microchip has been able to achieve and maintain high production yields.

## Need Additional Support and Resources?

Microchip is committed to supporting its customers by helping design engineers develop products faster and more efficiently. You can access three main service areas at www.microchip.com. The Design Support area provides a fast way to get questions answered. The Sample and Buy area offers evaluation samples of any Microchip device. microchipDIRECT provides 24-hour pricing, ordering, inventory and credit for convenient purchasing of all Microchip devices and development tools. This site also features online programming capabilities. Finally, the Training area offers opportunities to expand your knowledge with Microchip's online web seminars and hands-on courses at our worldwide Technical Training Centers. Our seminars and training classes are designed to fit your schedule and offer an overview of many product, development tool and application topics. Visit www.microchip.com/training for class content and schedules.

Have you ever encountered a technical dilemma at a critical point in your design development and your supplier was not available to answer your questions? Microchip's 24/7 global technical support line offers you technical support resources any time help is needed. Because some technical problems require hands-on assistance in order to be resolved quickly, Microchip has also developed a global team of field applications engineers and field sales engineers who provide local assistance.

# THERMAL MANAGEMENT

## THERMAL MANAGEMENT: Temperature Sensors

| Part # | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | Maximum Supply Current (µA) | Features | Packages |
|---|---|---|---|---|---|---|---|
| **Logic Output Temperature Sensors** | | | | | | | |
| TC6501 | ±0.5 | ±3 | –55 to +125 | +2.7 to +5.5 | 40 | Cross to MAX6501, open-drain | 5-pin SOT-23A |
| TC6502 | ±0.5 | ±3 | –55 to +125 | +2.7 to +5.5 | 40 | Cross to MAX6502, push-pull | 5-pin SOT-23A |
| TC6503 | ±0.5 | ±3 | –55 to +125 | +2.7 to +5.5 | 40 | Cross to MAX6503, open-drain | 5-pin SOT-23A |
| TC6504 | ±0.5 | ±3 | –55 to +125 | +2.7 to +5.5 | 40 | Cross to MAX6504, push-pull | 5-pin SOT-23A |
| TC620 | ±1 | ±3 | –40 to +125 | +4.5 to +18 | 400 | Two resistor-programmable trip points | 8-pin PDIP, 8-pin SOIC |
| TC621 | Note 1 | Note 1 | –40 to +85 | +4.5 to +18 | 400 | Requires external thermistor, resistor-programmable trip points | 8-pin PDIP, 8-pin SOIC |
| TC622 | ±1 | ±5 | –40 to +125 | +4.5 to +18 | 600 | Dual output, TO-220 for heat sink mounting, resistor-programmable trip points | 8-pin PDIP, 8-pin SOIC, 5-pin TO-220 |
| TC623 | ±1 | ±3 | –40 to +125 | +2.7 to +4.5 | 250 | Two resistor-programmable trip points | 8-pin PDIP, 8-pin SOIC |
| TC624 | ±1 | ±5 | –40 to +125 | +2.7 to +4.5 | 300 | Dual output, resistor-programmable trip points | 8-pin PDIP, 8-pin SOIC |
| MCP9501 | ±1 | ±4 | –40 to +125 | +2.7 to +5.5 | 40 | Active-High, Push-Pull Output, Rising Temperature Switch | 5-pin SOT-23 |
| MCP9502 | ±1 | ±4 | –40 to +125 | +2.7 to +5.5 | 40 | Active-Low, Open Drain Output, Rising Temperature Switch | 5-pin SOT-23 |
| MCP9503 | ±1 | ±4 | –40 to +125 | +2.7 to +5.5 | 40 | Active-High, Push-Pull Output, Falling Temperature Switch | 5-pin SOT-23 |
| MCP9504 | ±1 | ±4 | –40 to +125 | +2.7 to +5.5 | 40 | Active-Low, Open Drain Output, Falling Temperature Switch | 5-pin SOT-23 |
| MCP9509 | ±0.5 | NS | –40 to +125 | +2.7 to +5.5 | 50 | Resistor-programmable temperature switch | 5-pin SOT-23 |
| MCP9510 | ±0.5 | NS | –40 to +125 | +2.7 to +5.5 | 80 | Resistor-programmable temperature switch | 6-pin SOT-23 |
| **Voltage Output Temperature Sensors** | | | | | | | |
| MCP9700 | ±1 | ±4 | –40 to +125 | +2.3 to +5.5 | 12 | Linear Active Thermistor® IC, Temperature slope: 10 mV/°C | 3-pin TO-92, 5-pin SC-70, 3-pin SOT-23 |
| MCP9701 | ±1 | ±4 | –40 to +125 | +3.1 to +5.5 | 12 | Linear Active Thermistor IC, Temperature slope: 19.53 mV/°C, cross to MAX6612 | 3-pin TO-92, 5-pin SC-70, 3-pin SOT-23 |
| MCP9700A | ±1 | ±2 | –40 to +125 | +2.3 to +5.5 | 12 | Linear Active Thermistor IC, Temperature slope: 10 mV/°C | 3-pin TO-92, 5-pin SC-70, 3-pin SOT-23 |
| MCP9701A | ±1 | ±2 | –40 to +125 | +3.1 to +5.5 | 12 | Linear Active Thermistor IC, Temperature slope: 19.53 mV/°C, cross to MAX6612 | 3-pin TO-92, 5-pin SC-70, 3-pin SOT-23 |
| TC1046 | ±0.5 | ±2 | –40 to +125 | +2.7 to +4.4 | 60 | High precision temperature-to-voltage converter, 6.25 mV/°C | 3-pin SOT-23B |
| TC1047 | ±0.5 | ±2 | –40 to +125 | +2.7 to +4.4 | 60 | High precision temperature-to-voltage converter, 10 mV/°C | 3-pin SOT-23B |
| TC1047A | ±0.5 | ±2 | –40 to +125 | +2.5 to +5.5 | 60 | High precision temperature-to-voltage converter, 10 mV/°C | 3-pin SOT-23B |
| **Serial Output Temperature Sensors** | | | | | | | |
| MCP9800 | ±0.5 | ±1 | –55 to +125 | +2.7 to +5.5 | 400 | SMBus/I²C compatible interface, 0.0625°C to 0.5°C adj. resolution, Power-saving one-shot temperature measurement | 5-pin SOT-23 |
| MCP9801 | ±0.5 | ±1 | –55 to +125 | +2.7 to +5.5 | 400 | SMBus/I²C compatible interface, 0.0625°C to 0.5°C adj. resolution, Power-saving one-shot temperature measurement, multi-drop capability | 8-pin MSOP, 8-pin SOIC |
| MCP9802 | ±0.5 | ±1 | –55 to +125 | +2.7 to +5.5 | 400 | SMBus/I²C compatible interface with time out, 0.0625°C to 0.5°C adj. resolution, Power-saving one-shot temperature measurement | 5-pin SOT-23 |
| MCP9803 | ±0.5 | ±1 | –55 to +125 | +2.7 to +5.5 | 400 | SMBus/I²C compatible interface with time out, 0.0625°C to 0.5°C adj. resolution, Power-saving one-shot temperature measurement, Multi-drop capability | 8-pin MSOP, 8-pin SOIC |
| MCP9804 | ±0.25 | ±1 | –40 to +125 | +2.7 to +5.5 | 400 | User programmable temperature limits with alert output, 1°C temp. accuracy from –40°C to +125°C | 8-pin MSOP, 8-pin 2 × 3 DFN |
| MCP9805 | ±0.5 | ±1(2) | –20 to +125 | +3.0 to +3.6 | 400 | JEDEC-compatible register set, SMBus/I²C compatible interface, Programmable, Shut-down modes and EVENT output | 8-pin TSSOP, 8-pin 2 × 3 DFN |
| MCP9808 | ±0.25 | ±0.5 | –40 to +125 | +2.7 to +5.5 | 400 | 0.5°C temperature accuracy from –10°C to +100°C | 8-pin 2 × 3 DFN, 8-pin MSOP |
| MCP9843 | ±0.5 | ±1(2) | –20 to +125 | +3.0 to +3.6 | 500 | Compliant to JEDEC TSE3000B3 specification | 8-pin TSSOP, 8-pin 2 × 3 DFN, 8-pin 2 × 3 TDFN |
| MCP98243 | ±1 | ±3 | –40 to +125 | +3.0 to +3.6 | 500 | Serial output temperature sensor with integrated EEPROM (TSE2002B3) | 8-pin TSSOP, 8-pin 2 × 3 DFN, 8-pin 2 × 3 TDFN |
| MCP98244 | ±0.5 | ±3 | –40 to +125 | +1.7 to +3.6 | 500 | Serial output temperature sensor compliant to TSE2004a | 8-pin 2 × 3 TDFN |
| MCP9844 | ±0.5 | ±3 | –40 to +125 | +1.7 to +3.6 | 500 | Serial output temperature sensor with integrated EEPROM (TSE2004a) | 8-pin 2 × 3 TDFN |
| TC77 | ±0.5 | ±1 | –55 to +125 | +2.7 to +5.5 | 400 | SPI-compatible interface, 0.0625°C temperature resolution | 5-pin SOT-23A, 8-pin SOIC |
| TC72 | ±0.5 | ±1 | –55 to +125 | +2.65 to +5.5 | 400 | SPI-compatible interface, Power-saving one-shot temperature measurement, 0.25°C temperature resolution | 8-pin MSOP, 8-pin 3 × 3 DFN |
| TC74 | ±0.5 | ±2 | –40 to +125 | +2.7 to +5.5 | 350 | SMBus/I²C-compatible interface, 1°C temperature resolution | 5-pin SOT-23A, 5-pin TO-220 |
| TCN75A | ±0.5 | ±2 | –40 to +125 | +2.7 to +5.5 | 500 | SMBus/I²C-compatible interface, power-saving one-shot temperature measurement, multi-drop capability, 0.0625°C to 0.5°C adjustable temperature resolution | 8-pin MSOP, 8-pin SOIC |
| AT30TS74 | ±1 | ±2 | –55 to +125 | +1.7 to +5.5 | 125 | SMBus/I²C compatible interface, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 UDFN, 4-ball WLCSP, 5-ball WLCSP |
| AT30TS75A | ±0.5 | ±1 | –55 to +125 | +1.7 to +5.5 | 125 | SMBus/I²C compatible interface, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 UDFN |
| AT30TS750A | ±0.5 | ±1 | –55 to +125 | +1.7 to +5.5 | 125 | SMBus/I²C compatible interface, nonvoltatile registers to retain user-configured or pre-defined power-up defaults | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 UDFN |
| AT30TSE752A | ±0.5 | ±1 | –55 to +125 | +1.7 to +5.5 | 125 | SMBus/I²C compatible interface, nonvoltatile registers to retain user-configured or pre-defined power-up defaults, integrated 2 KB serial EEPROM | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 UDFN |

**Note 1:** These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.
**2:** Maximum accuracy measured at 85°C.

## THERMAL MANAGEMENT: Temperature Sensors (Continued)

| Part # | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | Maximum Supply Current (µA) | Features | Packages |
|---|---|---|---|---|---|---|---|
| **Serial Output Temperature Sensors (Continued)** | | | | | | | |
| AT30TSE754A | ±0.5 | ±1 | –55 to +125 | +1.7 to +5.5 | 125 | SMBus/I²C compatible interface, nonvoltatile registers to retain user-configured or pre-defined power-up defaults, integrated 4 KB serial EEPROM | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 UDFN |
| AT30TSE758A | ±0.5 | ±1 | –55 to +125 | +1.7 to +5.5 | 125 | SMBus/I²C compatible interface, nonvoltatile registers to retain user-configured or pre-defined power-up defaults, integrated 8 KB serial EEPROM | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 UDFN |
| AT30TSE002B | ±1 | ±3 | –40 to +125 | +2.7 to +3.6 | 500 | JEDEC (JC42.4) SO-DIMM SPD + TS compliant, SMBus/I²C compatible interface, integrated 2 KB serial EEPROM | 8-pin 2 × 3 UDFN |
| AT30TSE004A | ±0.5 | ±3 | –40 to +125 | +1.7 to +3.6 | 500 | JEDEC JC42.4 (TSE2004av) DIMM SPD + TS compliant, SMBus/I²C compatible interface, integrated 4 KB serial EEPROM | 8-pin 2 × 3 UDFN |

## THERMAL MANAGEMENT PRODUCTS: Temperature Sensors (Continued)

| Part # | # of Remote Temp. Sensors | Typ. Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temp. Range (°C) | Ambient Temp. Sensor | Alert/ THERM | Hardware Shutdown | Vcc Range (V) | Typ.Supply Current (µA) | Description and Additional Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Serial Output Temperature Sensors with Remote Diode Monitors** | | | | | | | | | | | |
| MIC184 | 1 | ±1.0 | ±2.0 | –55 to +125 | 1 | 1 | – | 2.7–5.5 | 340 | Local/Remote Thermal Supervisor | 8-pin SOIC, 8-pin MSOP |
| MIC280 | 1 | ±1.0 | ±2.0 | –55 to +125 | 1 | 1 | – | 3.0–3.6 | 230 | Precision IttyBitty® Thermal Supervisor | 6-pin SOT |
| MIC281 | 1 | ±1.0 | ±3.0 | –55 to +125 | 0 | 1 | – | 3.0–3.6 | 230 | Low-Cost IttyBitty Thermal Sensor | 6-pin SOT |
| MIC284 | 1 | ±1.0 | ±2.0 | –55 to +125 | 1 | 2 | – | 2.7–5.5 | 350 | Two-Zone Thermal Supervisor with CRIT Output | 8-pin SOIC, 8-pin MSOP |
| MIC384 | 2 | ±1.0 | ±2.0 | –55 to +125 | 1 | 1 | – | 2.7–5.5 | 350 | Three-Zone Thermal Supervisor | 8-pin SOIC, 8-pin MSOP |
| MCP9902 | 1 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 3.0–3.6 | 450 | Lower Temperature Dual Temperature Sensor | 8-pin WDFN |
| MCP9903 | 2 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 3.0–3.6 | 450 | Lower Temperature Triple Temperature Sensor | 10-pin 3 × 3 VDFN |
| MCP9904 | 3 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 3.0–3.6 | 450 | Lower Temperature Quad Temperature Sensor | 10-pin 3 × 3 VDFN |
| EMC1046 | 5 | ±0.25 | ±1.0 | –40 to +125 | 1 | – | – | 3.0–3.6 | 395 | Sextuple SMBus/I²C Sensor with REC, Beta Compensation and Hottest of Thermal Zones | 10-pin MSOP |
| EMC1047 | 6 | ±0.25 | ±1.0 | –40 to +125 | 1 | – | – | 3.0–3.6 | 395 | Septuple SMBus/I²C Sensor with REC, Beta Compensation and Hottest of Thermal Zones | 10-pin MSOP |
| EMC1072 | 1 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 3.0–3.6 | 430 | Dual SMBus/I²C Sensor with Selectable Address | 8-pin MSOP |
| EMC1073 | 2 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 3.0–3.6 | 430 | Triple SMBus/I²C Sensor with Selectable Address | 10-pin MSOP |
| EMC1074 | 3 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 3.0–3.6 | 430 | Quad SMBus/I²C Sensor with Selectable Address | 10-pin MSOP |
| EMC1812 | 1 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 1.62–3.6 | 25 | Dual Channel 1.8V Temperature Sensor with Rate of Change, Resistance Error Correction, Beta Comp | 8-pin WDFN |
| EMC1813 | 2 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 1.62–3.6 | 25 | Triple Channel 1.8V Temperature Sensor with Rate of Change, Resistance Error Correction, Beta Comp | 10-pin VDFN |
| EMC1814 | 3 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 1.62–3.6 | 25 | Quad Channel 1.8V Temperature Sensor with Rate of Change, Resistance Error Correction, Beta Comp | 10-pin VDFN |
| EMC1815 | 4 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 1.62–3.6 | 25 | Five Channel 1.8V Temperature Sensor with Rate of Change, Resistance Error Correction, Beta Comp | 10-pin VDFN |
| EMC1833 | 2 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 1.62–3.6 | 25 | Triple Channel 1.8V Temperature Sensor with Rate of Change, Resistance Error Correction, Beta Comp | 8-pin WDFN |
| EMC1186 | 1 | ±0.25 | ±1.0 | –40 to +125 | 1 | 1 | 1 | 3.0–3.6 | 200 | Dual Channel 1.8V SMBus/I²C Sensor with REC, Beta Compensation and Resistor-Settable Hardware Thermal Shutdown | 8-pin TDFN |
| EMC1187 | 2 | ±0.25 | ±1.0 | –40 to +125 | 1 | 1 | 1 | 3.0–3.6 | 200 | Triple Channel 1.8V SMBus/I²C Sensor with REC, Beta Compensation and Resistor-Settable Hardware Thermal Shutdown | 10-pin DFN |
| EMC1188 | 3 | ±0.25 | ±1.0 | –40 to +125 | 1 | 1 | 1 | 3.0–3.6 | 200 | Quad Channel 1.8V SMBus/I²C Sensor with REC, Beta Compensation and Resistor-Settable Hardware Thermal Shutdown | 10-pin DFN |
| EMC1412 | 1 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 3.0–3.6 | 430 | Dual SMBus/I²C Sensor with REC, Beta Compensation and Selectable Address | 8-pin TDFN, 8-pin MSOP |
| EMC1413 | 2 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 3.0–3.6 | 430 | Triple SMBus/I²C Sensor with REC, Beta Compensation and Selectable Address | 10-pin DFN, 10-pin MSOP |
| EMC1414 | 3 | ±0.25 | ±1.0 | –40 to +125 | 1 | 2 | – | 3.0–3.6 | 430 | Quad SMBus/I²C Sensor with REC, Beta Compensation and Selectable Address | 10-pin MSOP, 10-pin DFN |
| EMC1422 | 1 | ±0.25 | ±1.0 | –40 to +125 | 1 | 1 | 1 | 3.0–3.6 | 430 | Dual SMBus/I²C Sensor with REC, Beta Compensation and Resistor-Settable Hardware Thermal Shutdown | 8-pin MSOP |
| EMC1423 | 2 | ±0.25 | ±1.0 | –40 to +125 | 1 | 1 | 1 | 3.0–3.6 | 430 | Triple SMBus/I²C Sensor with REC, Beta Compensation and Resistor-Settable Hardware Thermal Shutdown | 10-pin MSOP |
| EMC1424 | 3 | ±0.25 | ±1.0 | –40 to +125 | 1 | 1 | 1 | 3.0–3.6 | 430 | Quad SMBus/I²C Sensor with REC, Beta Compensation and Resistor-Settable Hardware Thermal Shutdown | 10-pin MSOP |
| EMC1428 | 7 | ±0.25 | ±1.0 | –40 to +125 | 1 | 1 | 1 | 3.0–3.6 | 450 | Octal SMBus/I²C Sensor REC, Beta Compensation and Resistor-Settable Hardware Thermal Shutdown and Hottest of Thermal Zones | 16-pin QFN |
| EMC1438 | 7 | ±0.25 | ±1.0 | –40 to +125 | 1 | 1 | 1 | 3.0–3.6 | 450 | Octal SMBus/I²C Sensor REC, Beta Compensation and Resistor-Settable Hardware Thermal Shutdown and Hottest of Thermal Zones | 16-pin QFN |
| **EMC1822** | **1** | **±0.25** | **±1.0** | **–40 to +125** | **1** | **1** | **1** | **1.62–3.6** | **25** | **Dual Channel 1.8V Temperature Sensor with Rate of Change, Resistance Error Correction, Beta Comp** | **8 WDFN** |
| **EMC1823** | **2** | **±0.25** | **±1.0** | **–40 to +125** | **1** | **1** | **1** | **1.62–3.6** | **25** | **Triple Channel 1.8V Temperature Sensor with Rate of Change, Resistance Error Correction, Beta Comp** | **10 VDFN** |
| **EMC1824** | **3** | **±0.25** | **±1.0** | **–40 to +125** | **1** | **1** | **1** | **1.62–3.6** | **25** | **Quad Channel 1.8V Temperature Sensor with Rate of Change, Resistance Error Correction, Beta Comp** | **10 VDFN** |
| **EMC1825** | **4** | **±0.25** | **±1.0** | **–40 to +125** | **1** | **1** | **1** | **1.62–3.6** | **25** | **Five Channel 1.8V Temperature Sensor with Rate of Change, Resistance Error Correction, Beta Comp** | **10 VDFN** |
| **EMC1843** | **2** | **±0.25** | **±1.0** | **–40 to +125** | **1** | **1** | **1** | **1.62–3.6** | **25** | **Triple Channel 1.8V Temperature Sensor with Rate of Change, Resistance Error Correction, Beta Comp** | **8 WDFN** |

**Note 1:** These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor. **2:** Maximum accuracy measured at 85°C. **3:** TCN75 idle current is 250 mA. This device also has a Software Shutdown mode that reduces supply current to < 1 mA.

## THERMAL MANAGEMENT: Sensor Conditioning ICs

| Product | Description | Typical Tc Accuracy (°C) | Typical Th Accuracy (°C) | Temperature Range (°C) | Vcc Range (V) | Max Supply Current (µA) | Packages |
|---|---|---|---|---|---|---|---|
| MCP9600 | ±1.5°C thermocouple to degrees C converter. Supports thermocouple types K, J, T, N, S, E, B and R. | 1 | 1 | –40 to +125 | 2.7 to 5.5 | 500 | 5 × 5 MQFN |
| MCP96L00 | ±4°C thermocouple to degrees C converter. Supports thermocouple types K, J, T, N, S, E, B and R. | 1 | 4 | –40 to +125 | 2.7 to 5.5 | 500 | 5 × 5 MQFN |
| MCP96RL00 | ±6°C thermocouple to degrees C converter. Supports thermocouple types K, J, T, N, S, E, B and R. | 1 | 6 | –40 to +125 | 2.7 to 5.5 | 500 | 5× 5 MQFN |

## THERMAL MANAGEMENT: Open-Loop Fan Controllers and Fan Fault Detectors

| Part # | Description | # of Temp. Monitors | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | Maximum Supply Current (µA) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|
| EMC2101 | Single SMBus I²C Fan Manager | 2 | ±0.5 | ±1 | –40 to +125 | +3.0 to +3.6 | 1,000 | Fan Controller with high-frequency PWM driver, programmable fan speed table and alert | 8-pin MSOP, 8-pin SOIC |
| TC642 | Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 1,000 | FanSense™ Fan Monitor, Minimum fan speed control | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC642B | Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 400 | FanSense Fan Monitor, Minimum fan speed control, Fan auto-restart | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC646 | Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 1,000 | FanSense Fan Monitor, Auto-shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC646B | Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 400 | FanSense Fan Monitor, Auto-shutdown, Fan auto-restart | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC647 | Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 1,000 | FanSense Fan Monitor, Minimum fan speed control | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC647B | Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 400 | FanSense Fan Monitor, Minimum fan speed control, Fan auto-restart | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC648 | Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 1,000 | Overtemperature alert, Auto-shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC648B | Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 400 | Overtemperature alert, Auto-shutdown, Fan auto-restart | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC649 | Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 1,000 | FanSense Fan Monitor, Auto-shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC649B | Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 400 | FanSense Fan Monitor, Auto-shutdown, Fan auto-restart | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| TC650 | Fan Manager | 1 | ±1 | ±3 | –40 to +125 | +2.8 to +5.5 | 90 | Overtemperature alert | 8-pin MSOP |
| TC651 | Fan Manager | 1 | ±1 | ±3 | –40 to +125 | +2.8 to +5.5 | 90 | Overtemperature alert, Auto-shutdown | 8-pin MSOP |
| TC652 | Fan Manager | 1 | ±1 | ±3 | –40 to +125 | +2.8 to +5.5 | 90 | FanSense Fan Monitor, Overtemperature alert | 8-pin MSOP |
| TC653 | Fan Manager | 1 | ±1 | ±3 | –40 to +125 | +2.8 to +5.5 | 90 | FanSense Fan Monitor, Overtemperature alert, Auto-shutdown | 8-pin MSOP |
| TC654 | Dual SMBus Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 320 | FanSense Fan Monitor, RPM data | 10-pin MSOP |
| TC655 | Dual SMBus Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 320 | FanSense Fan Monitor, RPM data, Overtemperature alert | 10-pin MSOP |
| TC664 | Single SMBus Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 320 | FanSense Fan Monitor, RPM data | 10-pin MSOP |
| TC665 | Single SMBus Fan Manager | 1 | Note 1 | Note 1 | –40 to +85 | +3.0 to +5.5 | 320 | FanSense Fan Monitor, RPM data, Overtemperature alert | 10-pin MSOP |
| TC670 | Predictive Fan Fault Detector | 1 | N/A | N/A | –40 to +85 | +3.0 to +5.5 | 150 | FanSense Fan Monitor, Programmable threshold | 6-pin SOT-23 |

**Note 1:** These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.

## THERMAL MANAGEMENT: Closed-Loop Fan Controllers with SMBus/I²C Interface

| Part # | # of Fan Drivers | PWM/ Linear Control | # of Remote Temp. Monitors | Ambient Temp. Sensor | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | SMBus Alert | System Shutdown | Voltage Monitors | Description | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EMC2112 | 1 | Linear | 3 | 1 | ±0.25 | ±1.0 | 0 to +85 | +3.3 and +5 | Yes | Yes | No | RPM-Based Fan Controller with Hardware Thermal Shutdown | 20-pin QFN |
| EMC2103-1 | 1 | PWM | 1 | 1 | ±0.5 | ±1.0 | –40 to +125 | +3.0 to +3.6 | Yes | Yes | No | RPM-Based Fan Controller with Hardware Thermal Shutdown | 12-pin QFN |
| EMC2103-2 | 1 | PWM | 3 | 1 | ±0.5 | ±1.0 | –40 to +125 | +3.0 to +3.6 | Yes | Yes | No | RPM-Based Fan Controller with Hardware Thermal Shutdown | 16-pin QFN |
| EMC2103-4 | 1 | PWM | 3 | 1 | ±0.5 | ±1.0 | –40 to +125 | +3.0 to +3.6 | Yes | Yes | No | RPM-Based Fan Controller with Hardware Thermal Shutdown and EEPROM loadable | 16-pin QFN |
| EMC2104 | 2 | PWM | 4 | 1 | ±0.25 | ±1.0 | –40 to +85 | +3.0 to +3.6 | Yes | Yes | Yes | Dual RPM-Based PWM Fan Controller with Hardware Thermal Shutdown | 20-pin QFN |
| EMC2105 | 1 | Linear | 4 | 1 | ±0.25 | ±1.0 | –40 to +85 | +3.3 and +5.0 | Yes | Yes | Yes | RPM-Based High-Side Fan Controller with Hardware Thermal Shutdown | 20-pin QFN |
| EMC2106 | 2 | PWM & Linear | 4 | 1 | ±0.25 | ±1.0 | –40 to +85 | +3.3 and +5.0 | Yes | Yes | Yes | RPM-Based High Side Fan Controller with Hardware Thermal Shutdown | 28-pin QFN |
| EMC2113 | 1 | PWM | 3 | 1 | ±0.5 | ±1.0 | –40 to +125 | +3.0 to +3.6 | Yes | Yes | No | Single RPM-Based Fan Controller with Multiple Temperature Zones and Hardware Thermal Shutdown | 16-pin QFN |
| EMC2301 | 1 | PWM | N/A | N/A | N/A | N/A | –40 to +125 | +3.0 to +3.6 | Yes | No | N/A | Single RPM-Based PWM Fan Speed Controller | 8-pin MSOP |
| EMC2302 | 2 | PWM | N/A | N/A | N/A | N/A | –40 to +125 | +3.0 to +3.6 | Yes | No | N/A | Dual RPM-Based PWM Fan Speed Controller | 10-pin MSOP |
| EMC2303 | 3 | PWM | N/A | N/A | N/A | N/A | –40 to +125 | +3.0 to +3.6 | Yes | No | N/A | Triple RPM-Based PWM Fan Speed Controller | 12-pin QFN |
| EMC2305 | 5 | PWM | N/A | N/A | N/A | N/A | –40 to +125 | +3.0 to +3.6 | Yes | No | N/A | Penta RPM-Based PWM Fan Speed Controller | 16-pin QFN |

# MOTOR DRIVERS

## MOTOR DRIVERS: Stepper Motors, DC Motors and 3-Phase BLDC Motors

| Part # | Motor Type | Input Voltage Range (V) | Internal/ External FETs | Output Current (mA) | Control Scheme | Motor Speed Output | Protections | Temperature Operating Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| ATA6826C | DC Motor | 7 to 40 | Internal | 1000 | SPI | N/A | Short Circuit, Overtemperature, Power Supply Fail | –40 to +125 | 3 half bridge outputs, No shoot-through, Very low quiescent current <2 µA | SO14 |
| ATA6831C | DC Motor | 7 to 40 | Internal | 1000 | SPI | N/A | Short Circuit, Overtemperature, Power Supply Fail | –40 to +125 | 3 half bridge outputs, No shoot-through, Very low quiescent current <2 µA, PWM input | 18-pin 4 × 4 QFN |
| ATA6832C | DC Motor | 7 to 40 | Internal | 1000 | SPI | N/A | Short Circuit, Overtemperature, Power Supply Fail | –40 to +150 | 3 half bridge outputs, No shoot-through, Very low quiescent current <2 µA, PWM input | 18-pin 4 × 4 QFN |
| ATA6836C | DC Motor | 7 to 40 | Internal | 650 | SPI | N/A | Short Circuit, Overtemperature, Power Supply Fail | –40 to +125 | 6 half bridge outputs, No shoot-through, Very low quiescent current <2 µA | SO28 |
| ATA6838C | DC Motor | 7 to 40 | Internal | 950 | SPI | N/A | Short Circuit, Overtemperature, Power Supply Fail | –40 to +125 | 6 half bridge outputs, No shoot-through, Very low quiescent current <2 µA | 24-pin 5 × 5 QFN |
| ATA6823C | DC Motor | 7 to 20 | External | 100 | PWM, DIR | N/A | Short Circuit, Overtemperature, Over/ Under Voltage, Chargepump Fail | –40 to +125 | Dead time adjust, Charge pump supply for external battery reverse protection NMOS, LDO 3V3/5V, Window Watchdog, LIN TRX, Sleep mode <45µA | 32-pin 7 × 7 QFN |
| ATA6824C | DC Motor | 7 to 20 | External | 100 | PWM, DIR | N/A | Short Circuit, Overtemperature, Over/ Under Voltage, Chargepump Fail | –40 to +150 | Dead time adjust, Charge pump supply for external battery reverse protection NMOS, LDO 3V3/5V, Window Watchdog, HV interface | 32-pin 7 × 7 TQFP |
| ATA6843 | 3-Phase Brushless Motor | 5.5 to 32 | External | 100 | Direct PWM | N/A | Short Circuit, Overtemperature, Over/ Under Voltage, Chargepump Fail | –40 to +125 | Charge pump supply for external battery reverse protection NMOS, Dead time adjust, LDO 3V3/5V, Window Watchdog, LIN TRX, Sleep mode <45µA | 48-pin 7 × 7 QFN |
| ATA6844 | 3-Phase Brushless Motor | 5.5 to 32 | External | 100 | Direct PWM | N/A | Short Circuit, Overtemperature, Over/ Under Voltage, Chargepump Fail | –40 to +150 | Charge pump supply for external battery reverse protection NMOS, Dead time adjust, LDO 3V3/5V, Window Watchdog, LIN TRX, Sleep mode <45 µA | 48-pin 7 × 7 QFN |
| MCP8063 | 3-Phase Brushless Motor | 2.0 to 14.0 | Internal | 750 | Sensorless Sinusoidal | Frequency Generator | Overtemperature, Motor Lock-up, Overcurrent, Overvoltage | –40 to +125 | 3-Phase BLDC 180° Sinusoidal Sensorless Fan Motor Driver, Overcurrent Limitation, Output Switching Frequency at 23 kHz | Thermally Enhanced 8-pin 4 × 4 DFN |
| MTS62C19A | One Bipolar Stepper Motor or Two DC Motors | 10.0 to 40.0 | Internal | 750 | Direct PWM Input, Current Limit Control, Microstepping | No | Overtemperature, Under Voltage | –40 to +105 | Dual Full-Bridge Motor Driver for Stepper Motors, Pin compatible with Allegro 6219 | 24-pin SOIC |
| MTS2916A | One Bipolar Stepper Motor or Two DC Motors | 10.0 to 40.0 | Internal | 750 | Direct PWM Input, Current Limit Control, Microstepping | No | Overtemperature, Under Voltage | –40 to +105 | Dual Full-Bridge Motor Driver for Stepper Motors, Pin compatible with Allegro 2916 | 24-pin SOIC |
| MTD6501C | 3-Phase Brushless Motor | 2.0 to 14.0 | Internal | 800 | Sensorless Sinusoidal | Frequency Generator | Overtemperature, Motor Lock-up, Overcurrent, Overvoltage | –30 to +95 | 3-Phase BLDC 180° Sinusoidal Sensorless Fan Motor Driver, Overcurrent limitation, Output Switching Frequency at 20 kHz | Thermally Enhanced 8-pin SOP |
| MTD6501D | 3-Phase Brushless Motor | 2.0 to 14.0 | Internal | 500 | Sensorless Sinusoidal | Frequency Generator | Overtemperature, Motor Lock-up, Overcurrent, Overvoltage | –30 to +95 | 3-Phase BLDC 180° Sinusoidal Sensorless Fan Motor Driver, Boost Mode, Overcurrent limitation, Output Switching Frequency at 20 kHz | 10-pin MSOP |
| MTD6501G | 3-Phase Brushless Motor | 2.0 to 14.0 | Internal | 800 | Sensorless Sinusoidal | Frequency Generator | Overtemperature, Motor Lock-up, Overcurrent, Overvoltage | –30 to +95 | 3-Phase BLDC 180° Sinusoidal Sensorless Fan Motor Driver, Overcurrent limitation, Output Switching Frequency at 23 kHz | Thermally Enhanced 8-pin SOP |
| MTD6502B | 3-Phase Brushless Motor | 2.0 to 5.5 | Internal | 750 | Sensorless Sinusoidal | Frequency Generator | Overtemperature, Motor Lock-up, Overcurrent, Overvoltage | –40 to +125 | 3-Phase BLDC Sinusoidal Sensorless Fan Motor Driver, Direction control, Overcurrent limitation, Output Switching Frequency at 30 kHz | 10-pin 3 × 3 TDFN |
| MTD6508 | 3-Phase Brushless Motor | 2.0 to 5.5 | Internal | 750 | Sensorless Sinusoidal | Frequency Generator | Overcurrent, Overvoltage, Overtemperature, Motor Lock-up | –40 to +125 | 180° Sinusoidal Sensorless Drive, Direction Control, Programmable BEMF Coefficient Range, Output Switching Frequency at 30 kHz, Programmable Start-up RPM and Slew Rate, Selectable Start-up Strength and Phase Target Regulation | 10-pin 3 × 3 UDFN, 16-pin 4 × 4 UQFN |
| MTD6505 | 3-Phase Brushless Motor | 2.0 to 5.5 | Internal | 750 | Sensorless Sinusoidal | Frequency Generator | Overcurrent, Overvoltage, Overtemperature, Motor Lock-up | –40 to +125 | 180° Sinusoidal Sensorless Drive, Direction Control, Programmable BEMF Coefficient Range, Output Switching Frequency at 30 kHz | 10-pin 3 × 3 UDFN |

# POSITION SENSORS

**POSITION SENSORS: Inductive Sensors**

| Part # | Calibration Segments | Sensor Offset Adjust | Origin Adjust (bits) | Output Interface | Output Resolution (bits) | Redundant IC support | # of ADCs | ADC Sampling Rate (samples/sec) | ADC for external sensor (bits) | MCU | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LX3301A | 6 | Yes | 12 | Analog, PWM | 12 | Yes | 2 | 2000 | N/A | 32-bit, 8 MHz | -40 to +125 | AEC-Q100 Grade 1, ISO26262 Support, integrated input EMI filters | 14-pin TSSOP |
| LX3302A | 8 | Yes | 12 | Analog, PWM, SENT, PSI5, Sin/Cos | 12 | Yes | 3 | 2000 | 10 | 32-bit, 8 MHz | -40 to +150 | AEC-Q100 Grade 0, ISO26262 Support, integrated temperature sensor, external sensor interface | 14-pin TSSOP |

# POWER MANAGEMENT

**POWER MANAGEMENT: Voltage References**

| Part # | $V_{IN}$ Max (V) | Output Voltage (V) | Max. Load Current (mA) | Initial Accuracy (max.%) | Temperature Coefficient (ppm/°C) | Maximum Supply Current (µA @ 25°C) | Packages |
|---|---|---|---|---|---|---|---|
| MCP1501 | 5.5 | 1.024, 1.250, 1.8, 2.048, 2.5, 3.0, 3.3, 4.096 | 20 | ±0.08 | 50 | 350 | 8-pin 2 × 2 WDFN, 6-pin SOT-23, 8-pin SOIC |
| MCP1525 | 5.5 | 2.5 | ±2 | ±1 | 50 | 100 | 3-pin TO-92, 3-pin SOT-23B |
| MCP1541 | 5.5 | 4.096 | ±2 | ±1 | 50 | 100 | 3-pin TO-92, 3-pin SOT-23B |
| LM4040C | 15 | 2.5, 4.096, 5.0 | 15 | ±0.5 | 100 | 65–85 | 3-pin SOT-23 |
| LM4040D | 15 | 2.5, 4.096, 5.0 | 15 | ±1 | 150 | 65–85 | 3-pin SOT-23 |
| LM4041C | 15 | 1.225, Adj. (1.24–10V) | 12 | ±0.5 | 100 | 70 | 3-pin SOT-23 |
| LM4041D | 15 | 1.225, Adj. (1.24–10V) | 12 | ±1 | 150 | 70 | 3-pin SOT-23 |
| MIC40403 | 10 | Adjustable | 15 | ±1 | – | 70 | 8-pin SOT-143 |

**POWER MANAGEMENT: Single Output Linear Regulators**

| Part # | Output Current (mA) | $V_{IN}$ Min (V) | $V_{IN}$ Max (V) | $V_{OUT}$ (V) | Voltage Drop Typical (mV) | Iq Typical (µA) | Output Accuracy (%) | PSRR 1 kHz (dB) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP1811 | 150 | 1.8 | 5.5 | 1.2, 1.8, 2.8, 3.0, 3.3 | 400 | 250 nA | ±2 | 50 | Ultra-Low Iq | 1 x 1 DFN, SOT23-3, SOT23-5, SC70-3, SC70-5 |
| MCP1812 | 300 | 1.8 | 5.5 | 1.2, 1.8, 2.8, 3.0, 3.3 | 400 | 250 nA | ±2 | 50 | Ultra-Low Iq | 1 x 1 DFN, SOT23-3, SOT23-5, SC70-3, SC70-5 |
| MIC5231 | 10 | 3.5 | 12 | 2.75, 3.0, 3.3, 5.0 | 150 | 650 nA | ±2 | 50 | High Input Voltage, Small Package | 5-pin SOT-23 |
| MIC5232 | 10 | 2.7 | 7 | 1.2, 2.5, 2.8, 3.3 | 100 | 1.8 uA | ±2 | 55 | 7V input | 5-pin TSOT, 6-pin VDFN |
| MAQ5280 | 25 | 4.5 | 120 | Adj. | 1100 | 31 µA | ±2 | 80 | Ultra-High Input Voltage, Load Dump | 8-pin SOIC |
| MIC5280 | 25 | 4.5 | 120 | Adj. | 1100 | 31 µA | ±2 | 80 | High Input Voltage, Load Dump, Reverse Battery Protection | 8-pin SOIC |
| MIC5281 | 25 | 6 | 120 | 3.3, 5.0, Adj. | 2000 | 6 µA | ±3 | 90 | High Input Voltage, Load Dump | 8-pin MSOP |
| MAQ5281 | 25 | 6 | 120 | 3.3, 5.0, Adj. | 2000 | 6 µA | ±3 | 90 | High Input Voltage, Load Dump | 8-pin MSOP |
| MAQ5282 | 50 | 6 | 120 | 3.3, 5.0, Adj. | 2000 | 6 µA | ±3 | 90 | High Input Voltage, High PSRR | 8-pin MSOP |
| MIC5282 | 50 | 6 | 120 | 3.3, 5.0, Adj. | 2000 | 6 µA | ±3 | 90 | High Input Voltage, Load Dump | 8-pin MSOP |
| TC1014 | 50 | 2.7 | 6 | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 85 | 50 µA | ±0.5 | 64 | Ultra Low Dropout | 5-pin SOT-23 |
| TC1054 | 50 | 2.7 | 6 | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 85 | 50 µA | ±0.5 | 64 | Ultra Low Dropout | 5-pin SOT-23 |
| TC1070 | 50 | 2.7 | 6 | 1.23–5.5 | 85 | 50 µA | ±0.5 | 64 | Ultra Low Dropout | 5-pin SOT-23 |
| TC1072 | 50 | 2.7 | 6 | 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 85 | 50 µA | ±0.5 | 64 | Ultra Low Dropout | 6-pin SOT-23 |
| TC1223 | 50 | 2.7 | 6 | 2.5, 2.7, 2.8, 3.0, 3.3, 3.6, 4.0, 5.0 | 85 | 50 µA | ±0.5 | 64 | Ultra Low Dropout | 5-pin SOT-23 |
| TC2014 | 50 | 2.7 | 6 | 1.8, 2.7, 2.8, 3.0, 3.3 | 45 | 50 µA | ±0.4 | 55 | Ultra Low Dropout | 5-pin SOT-23 |
| TC2054 | 50 | 2.7 | 6 | 1.8, 2.7, 2.8, 3.0, 3.3 | 45 | 55 µA | ±0.4 | 50 | Ultra Low Dropout | 5-pin SOT-23 |
| MCP1790 | 70 | 6 | 30 | 3.0, 3.3, 5.0 | 700 | 70 µA | ±0.2 | 90 | High Input | 3-pin SOT-223, 3-pin DDPAK |
| MCP1791 | 70 | 6 | 30 | 3.0, 3.3, 5.0 | 700 | 70 µA | ±0.2 | 90 | High Input | 5-pin DDPAK, 5-pin SOT-223 |
| MIC5203 | 80 | 2.5 | 16 | 2.6, 2.8, 3.0, 3.3, 3.6, 3.8, 4.0, 4.5, 5.0 | 300 | 180 µA | ±3 | 60 | High Input Voltage, Small Package | 4-pin SOT-143, 5-pin SOT-23 |
| MIC5213 | 80 | 2.5 | 16 | 2.5, 2.6, 2.7, 2.8, 3.0, 3.3, 3.6, 5.0 | 280 | 180 µA | ±3 | 60 | High Input Voltage, Small Package | 5-pin SC70 |
| TC1016 | 80 | 2.7 | 6 | 1.8, 2.7, 2.8, 3.0 | 150 | 53 µA | ±0.5 | 58 | Low Dropout | 5-pin SC-70, 5-pin SOT-23 |
| LP2951 | 100 | 2 | 30 | 4.8, 5.0, Adj. | 380 | 100 µA | ±0.5 | 70 | High Input Voltage, High PSRR | 8-pin SOIC, 8-pin PDIP |
| MIC5200 | 100 | 2.5 | 26 | 3.0, 3.3, 4.8, 5.0 | 230 | 130 µA | ±1 | 70 | Low Dropout | 8-pin MSOP, 3-pin SOT-223, 8-pin SOIC |
| MIC5233 | 100 | 2.3 | 36 | 1.8, 2.5, 3.0, 3.3, 5.0, Adj. | 270 | 18 µA | ±1 | 50 | High Input Voltage, Reverse Battery and Current Protection | 3-pin SOT-223, 5-pin SOT-23 |

## POWER MANAGEMENT: Single Output Linear Regulators (Continued)

| Part # | Output Current (mA) | VIN Min (V) | VIN Max (V) | VOUT (V) | Voltage Drop Typical (mV) | IGND Typical (µA) | Output Accuracy (%) | PSRR 1 kHz (dB) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MIC5253 | 100 | 2.7 | 5.5 | 1.5, 1.8, 1.85, 2.5, 2.6, 2.7, 2.8, 2.9, 3.0, 3.1, 3.2, 3.3 | 165 | 75 µA | ±0.5 | 70 | Low Dropout | 5-pin SC70 |
| MIC5270 | 100 | –2 | –16 | (–)3.0, (–)4.1, (–)5.0, Adj. | 500 | 35 µA | ±2 | 50 | Negative LDO | 5-pin SOT-23 |
| MIC5271 | 100 | –3.3 | –16 | (–)3.0, (–)4.1, (–)5.0, Adj. | 500 | 25 µA | ±2 | 50 | Negative LDO | 5-pin SOT-23 |
| TC1015 | 100 | 2.7 | 6 | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 180 | 50 µA | ±0.5 | 64 | Low Droput | 5-pin SOT-23 |
| TC1055 | 100 | 2.7 | 6 | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 180 | 50 µA | ±0.5 | 64 | Low Droput | 5-pin SOT-23 |
| TC1071 | 100 | 2.7 | 6 | 1.23–5.5 | 180 | 50 µA | ±0.5 | 64 | Low Droput | 5-pin SOT-23 |
| TC1073 | 100 | 2.7 | 6 | 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 180 | 50 µA | ±0.5 | 64 | Low Droput | 6-pin SOT-23 |
| TC1224 | 100 | 2.7 | 6 | 2.5, 2.7, 2.8, 3.0, 3.3, 3.6, 4.0, 5.0 | 180 | 50 µA | ±0.5 | 64 | Low Droput | 5-pin SOT-23 |
| TC2015 | 100 | 2.7 | 6 | 1.8, 2.7, 2.8, 3.0, 3.3 | 90 | 55 µA | ±0.4 | 55 | Low Droput | 5-pin SOT-23 |
| TC2055 | 100 | 2.7 | 6 | 1.8, 2.7, 2.8, 3.0, 3.3 | 90 | 55 µA | ±0.4 | 50 | Low Droput | 5-pin SOT-23 |
| TC59 | 100 | – | –10 | –8 | 380 | 3 µA | ±0.5 | 50 | Negative LDO | 3-pin SOT-23A |
| TC1188 | 120 | 2.7 | 6 | 1.8, 2.8, 2.84, 3.15 | 130 | 50 µA | ±0.5 | 80 | High PSRR | 5-pin SOT-23 |
| TC1189 | 120 | 2.7 | 6 | 1.8, 2.8, 2.84, 3.15 | 130 | 50 µA | ±0.5 | 80 | High PSRR | 5-pin SOT-23 |
| MCP1810 | 150 | 2.5 | 5.5 | 1.2, 1.8, 2.5, 3.0, 3.3, 4.2 | 380 | 0.02 µA | ±1 | 25 | Ultra Low Io | 5-pin SOT-23, 2 × 2 VDFN |
| MAQ5283 | 150 | 6 | 120 | 3.3, 5.0, Adj. | 1800 | 8 µA | ±3 | 75 | High Input Voltage, High PSRR | 8-pin SOIC |
| MIC2951 | 150 | 2 | 30 | 3.3, 5.0 | 320 | 120 µA | ±1 | 67 | Load Dump, Reverse Battery Protection | 8-pin MSOP, 8-pin SOIC, 8-pin PDIP |
| MIC5205 | 150 | 2.5 | 16 | 2.5, 2.7, 2.8, 2.85, 2.9, 3.0, 3.1, 3.2, 3.3, 3.6, 3.8, 4.0, 5.0, Adj. | 165 | 80 µA | ±1 | 75 | High Input Voltage, Small Package | 5-pin SOT-23 |
| MIC5206 | 150 | 2.5 | 16 | 2.5, 2.7, 3.0, 3.2, 3.3, 3.6, 3.8, 4.0, 5.0, Adj. | 165 | 1.3mA | ±1 | 75 | High Input Voltage, Small Package | 8-pin MSOP, 5-pin SOT-23 |
| MIC5225 | 150 | 2.3 | 16 | 1.5, 1.8, 2.5, 2.7, 3.0, 3.3, 5.0, Adj. | 310 | 29 µA | ±0.5 | 35 | High Input Voltage, Small Package, Reverse Current Protection | 5-pin SOT-23 |
| MIC5234 | 150 | 2.3 | 30 | Adj. | 320 | 20 µA | ±1 | – | High Input Voltage, Load Dump, Reverse Battery and Current Protection | 8-pin SOIC |
| MIC5235 | 150 | 2.3 | 24 | 1.5, 1.8, 2.5, 2.7, 3.0, 3.3, 5.0, Adj. | 310 | 18 µA | ±1 | 35 | High Input Voltage, Reverse Battery and Current Protection | 5-pin SOT-23 |
| MIC5236 | 150 | 2.3 | 30 | 2.5, 3.0, 3.3, 5.0, Adj. | 300 | 20 µA | ±1 | 55 | High Input Voltage, Load Dump, Reverse Battery and Current Protection | 8-pin MSOP, 8-pin SOIC |
| MIC5238 | 150 | 1.5 | 6 | 1.0, 1.1, 1.3 | 310 | 23 µA | ±5 | 50 | Low Dropout | 5-pin TSOT, 5-pin SOT-23 |
| MIC5247 | 150 | 2.7 | 6 | 1.5, 1.6, 1.8, 1.85, 2.0, 2.1, 2.2, 2.4 | 150 | 85 µA | ±1 | 60 | Low Dropout | 5-pin TSOT, 6-pin VDFN, 5-pin SOT-23 |
| MIC5248 | 150 | 2.7 | 6 | 1.2 | – | 100 µA | ±3 | 60 | Low Dropout | 6-pin VDFN, 5-pin SOT-23 |
| MIC5252 | 150 | 2.7 | 6 | 1.8, 2.5, 2.8, 2.85, 3.0, 4.75 | 135 | 90 µA | ±1 | 60 | Low Dropout | 6-pin VDFN, 5-pin SOT-23 |
| MIC5255 | 150 | 2.7 | 6 | 2.5, 2.6, 2.7, 2.75, 2.8, 2.85, 2.9, 3.0, 3.1, 3.2, 3.3, 3.5 | 135 | 90 µA | ±1 | 60 | Low Dropout | 5-pin TSOT, 6-pin VDFN, 5-pin SOT-23 |
| MIC5256 | 150 | 2.7 | 6 | 1.5, 1.8, 2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.1, 3.3 | 135 | 90 µA | ±1 | 60 | Low Dropout | 5-pin TSOT, 5-pin SOT-23 |
| MIC5258 | 150 | 2.7 | 6 | 1.2 | – | 85 µA | ±3 | – | Low Dropout | 5-pin SOT-23 |
| MIC5265 | 150 | 2.7 | 5.5 | 1.5, 1.8, 1.85, 2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.1, 3.2, 3.3 | 210 | 75 µA | ±2 | 64 | Low Dropout | 5-pin TSOT, 6-pin UDFN |
| MIC5268 | 150 | 2.7 | 6 | 1.2 | – | 110 µA | ±3 | – | Low Dropout | 5-pin SOT-23 |
| MIC5283 | 150 | 6 | 120 | 3.3, 5.0, Adj. | 1800 | 8 µA | ±3 | 75 | High Input Voltage, Load Dump | 8-pin SOIC, 8-pin VDFN |
| MIC5295 | 150 | 2.3 | 24 | 3.0, 3.3, 5.0, Adj. | 310 | 18 µA | ±1 | 50 | Reverse Battery and Current Protection | 5-pin TO-252 |
| MIC5301 | 150 | 2.3 | 5.5 | 1.3, 1.5, 1.8, 2.1, 2.5, 2.6, 2.8, 2.85, 2.9, 3.0, 3.3, 4.6, Adj. | 40 | 85 µA | ±2 | 75 | Ultra Low Dropout | 5-pin TSOT, 6-pin UDFN, 6-pin WDFN |
| MIC5302 | 150 | 2.3 | 5.5 | 1.3, 1.5, 1.8, 2.1, 2.5, 2.6, 2.8, 2.85, 2.9, 3.0, 3.3, 4.6 | 50 | 85 µA | ±2 | 65 | Ultra Low Dropout | 4-pin UDFN |
| MIC5304 | 150 | 2.3 | 5.5 | 3.15/1.85, 3.15/1.875, 3.2/1.8 | 85 | 24 µA | ±0.5 | 65 | Ultra Low Dropout | 6-pin UDFN |
| MIC5305 | 150 | 2.25 | 5.5 | 1.5, 1.8, 2.0, 2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.3, 4.6, 4.75, Adj. | 60 | 90 µA | ±1 | 85 | Ultra Low Dropout | 5-pin TSOT, 6-pin UDFN, 6-pin VDFN |
| MIC5306 | 150 | 2.25 | 5.5 | 1.8, 2.5, 2.6 | 45 | 16 µA | ±1 | 62 | Ultra Low Dropout | 5-pin TSOT |
| MIC5308 | 150 | 1.6 | 5.5 | 1.2, 1.5, 1.8, Adj. | 45 | 23 µA | ±2 | 90 | Ultra Low Dropout, Ultra High PSRR | 6-pin TSOT, 6-pin UDFN |

## POWER MANAGEMENT: Single Output Linear Regulators (Continued)

| Part # | Output Current (mA) | VIN Min (V) | VIN Max (V) | VOUT (V) | Voltage Drop Typical (mV) | IGND Typical (µA) | Output Accuracy (%) | PSRR 1 kHz (dB) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MIC5317 | 150 | 2.5 | 6 | 1.0, 1.2, 1.5, 1.8, 2.5, 2.8, 3.0, 3.3 | 155 | 32 µA | ±2 | 80 | High PSRR | 5-pin TSOT, 4-pin UDFN, 5-pin SOT-23 |
| MIC5365 | 150 | 2.5 | 5.5 | 1.5, 1.8, 2.0, 2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.3 | 155 | 32 µA | ±2 | 80 | High PSRR | 5-pin SC70, 5-pin TSOT, 4-pin UDFN |
| MIC5366 | 150 | 2.5 | 5.5 | 1.5, 1.8, 2.0, 2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.3 | 155 | 32 µA | ±2 | 80 | High PSRR | 5-pin SC70, 4-pin UDFN |
| MIC5376 | 150 | 2.5 | 5.5 | 2.8 | 120 | 29 µA | ±2 | 60 | Low Dropout | 5-pin SC70, 4-pin UDFN |
| MIC5377 | 150 | 2.5 | 5.5 | Adj. | 120 | 29 µA | ±2 | 60 | Low Dropout | 5-pin SC70, 8-pin UQFN |
| MIC5378 | 150 | 2.5 | 5.5 | Adj. | 120 | 29 µA | ±2 | 60 | Low Dropout | 5-pin SC70, 8-pin UQFN |
| MCP1711 | 150 | 1.4 | 6 | 1.1–5.0 | 670 | 0.6 µA | ±1 | – | Ultra Low Iq, Capless | 4-pin UQFN, 5-pin SOT-23 |
| MCP1754 | 150 | 3.6 | 16 | 1.8–5.0 | 300 | 56 µA | ±0.4 | 72 | High Performance | 8-pin DFN, 5-pin SOT-223, 5-pin SOT-23 |
| MCP1754S | 150 | 3.6 | 16 | 1.8–5.0 | 300 | 56 µA | ±0.2 | 72 | High Performance | 3-pin SOT-89, 3-pin SOT-23A, 3-pin SOT-223, 8-pin DFN |
| MCP1804 | 150 | 2 | 28 | 1.8–18 | 300 | 50 µA | ±2 | 50 | High Input | 3-pin SOT-89, 5-pin SOT-89, 3-pin SOT-223, 5-pin SOT-23 |
| TC1017 | 150 | 2.7 | 6 | 1.8, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.3, 4.0 | 285 | 53 µA | ±0.5 | 58 | Low Dropout | 5-pin SC-70, 5-pin SOT-23 |
| TC1185 | 150 | 2.7 | 6 | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 270 | 50 µA | ±0.5 | 64 | Low Dropout | 5-pin SOT-23 |
| TC1186 | 150 | 2.7 | 6 | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 270 | 50 µA | ±0.5 | 64 | Low Dropout | 5-pin SOT-23 |
| TC1187 | 150 | 2.7 | 6 | 1.23–5.5 | 270 | 50 µA | ±0.5 | 64 | Low Dropout | 5-pin SOT-23 |
| TC2185 | 150 | 2.7 | 6 | 1.8, 2.7, 2.8, 3.0, 3.3 | 140 | 55 µA | ±0.4 | 55 | High Accuracy | 5-pin SOT-23 |
| TC2186 | 150 | 2.7 | 6 | 1.8, 2.7, 2.8, 3.0, 3.3 | 140 | 55 µA | ±0.4 | 50 | High Accuracy | 5-pin SOT-23 |
| MIC5207 | 180 | 2.5 | 16 | 1.8, 2.5, 2.8, 2.9, 3.0, 3.1, 3.2, 3.3, 4.0, 5.0, Adj. | 165 | 80 µA | ±3 | 75 | High Input Voltage, Small Package | 5-pin TSOT, 5-pin SOT-23 |
| MIC5201 | 200 | 2.5 | 26 | 3.0, 3.3, 4.8, 5.0, Adj. | 270 | 130 µA | ±2 | 75 | Low Dropout | 8-pin MSOP, 3-pin SOT-223, 8-pin SOIC |
| MIC5367 | 200 | 2.5 | 5.5 | 1.2, 1.5, 3.3 | 180 | 29 µA | ±2 | 65 | Low Dropout | 6-pin UDFN |
| MIC5368 | 200 | 2.5 | 5.5 | 1.2, 1.5, 3.3 | 180 | 29 µA | ±1 | 65 | Low Dropout | 6-pin UDFN |
| MIC94300 | 200 | 1.8 | 3.6 | Input Follower | 170 | 138 µA | – | 0 | RippleBlocker | 4-pin UDFN |
| MIC94310 | 200 | 1.8 | 3.6 | 1.2, 1.5, 1.8, 1.85, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3 | 40 | 170 µA | ±1 | 85 | RippleBlocker | 4-pin UDFN, 5-pin SOT-23 |
| MIC2954 | 250 | 2 | 30 | 5.0, Adj. | 375 | 140 µA | ±1 | – | Load Dump | 3-pin SOT-223, 3-pin TO-220, 8-pin SOIC |
| MCP1700 | 250 | 2.3 | 6 | 1.8, 2.5, 3.0, 3.3, 5.0 | 300 | 1.6 µA | ±0.4 | 44 | Low Iq | 3-pin TO-92, 3-pin SOT-89, 3-pin SOT-23, 6-pin DFN |
| MCP1702 | 250 | 2.7 | 13.2 | 1.2, 1.5, 1.8, 2.5, 2.8, 3.0, 3.3, 4.0, 5.0 | 625 | 2 µA | ±0.4 | 44 | Low Iq | 3-pin TO-92, 3-pin SOT-89, 3-pin SOT-23A |
| MCP1703A | 250 | 2.7 | 16 | 1.2–5.5 | 625 | 2 µA | ±0.4 | 35 | High Input, Low Iq | 3-pin SOT-89, 3-pin SOT-23A, 3-pin SOT-223, 8-pin DFN |
| MAQ5300 | 300 | 2.3 | 5.5 | 1.5, 1.8, 2.5, 2.8, 2.85, 3.0, 3.3 | 100 | 85 µA | ±2 | 65 | Low Dropout | 6-pin VDFN |
| MIC5249 | 300 | 2.7 | 6 | 1.5, 1.8, 2.5, 2.8, 2.85, 3.0, 3.3 | 340 | 85 µA | ±1 | 65 | High PSRR | 8-pin MSOP |
| MIC5259 | 300 | 2.7 | 6 | 1.5, 1.8, 2.1, 2.5, 2.8, 2.85, 3.0, 3.3 | 300 | 105 µA | ±0.5 | 70 | Low Dropout | 5-pin TSOT, 6-pin VDFN |
| MIC5303 | 300 | 2.3 | 5.5 | 1.5, 1.8, 2.1, 2.5, 2.6, 2.8, 2.85, 2.9, 3.0, 3.3 | 100 | 85 µA | ±2 | 65 | Ultra Low Dropout | 4-pin UDFN |
| MIC5307 | 300 | 2.4 | 5.5 | 1.5, 1.8, 2.8, 3.0 | 120 | 20 µA | ±1 | 62 | Low Dropout | 5-pin TSOT |
| MIC5309 | 300 | 1.7 | 5.5 | 1.2, 1.5, 1.8, Adj. | 100 | 23 µA | ±2 | 90 | Ultra High PSRR | 6-pin TSOT, 6-pin UDFN |
| MIC5318 | 300 | 2.3 | 6 | 1.5, 1.8, 2.5, 2.8, 3.3, Adj. | 110 | 85 µA | ±2 | 75 | High PSRR | 5-pin TSOT, 6-pin UDFN |
| MIC5323 | 300 | 2.65 | 5.5 | 1.8, 2.8, 3.3, Adj. | 120 | 90 µA | ±2 | 80 | High PSRR | 5-pin TSOT, 6-pin UDFN |
| MIC5327 | 300 | 2.3 | 5.5 | 1.8, 2.8 | 180 | 24 µA | ±0.5 | 60 | High PSRR | 4-pin UDFN |
| MIC5337 | 300 | 2.3 | 5.5 | 1.8, 2.8 | 180 | 24 µA | ±0.5 | 65 | High PSRR | 4-pin UDFN |
| MIC5353 | 300 | 2.6 | 6 | 1.8, 2.5, 2.6, 2.8, 3.0, 3.3, Adj. | 160 | 90 µA | ±2 | 60 | Low Dropout | 6-pin UDFN |
| MIC5363 | 300 | 2.5 | 5.5 | 1.2, 2.1, 2.8, 3.3 | 225 | 38 µA | ±2 | 80 | High PSRR | 6-pin UDFN |
| MIC5364 | 300 | 2.5 | 5.5 | 1.2, 2.1, 2.8, 3.3 | 225 | 38 µA | ±2 | 80 | High PSRR | 6-pin UDFN |
| MIC5501 | 300 | 2.5 | 5.5 | 1.2, 1.8, 2.8, 3.0, 3.3 | 160 | 38 µA | ±2 | 60 | Low Dropout | 4-pin UDFN, 5-pin SOT-23 |

## POWER MANAGEMENT: Single Output Linear Regulators (Continued)

| Part # | Output Current (mA) | VIN Min (V) | VIN Max (V) | VOUT (V) | Voltage Drop Typical (mV) | IGND Typical (µA) | Output Accuracy (%) | PSRR 1 kHz (dB) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MIC5502 | 300 | 2.5 | 5.5 | 1.2, 1.8, 2.8, 3.0, 3.3 | 160 | 38 µA | ±2 | 60 | Low Dropout | 4-pin UDFN |
| MIC5503 | 300 | 2.5 | 5.5 | 1.2, 1.8, 2.8, 3.0, 3.3 | 160 | 38 µA | ±2 | 60 | Low Dropout | 4-pin UDFN |
| MIC5504 | 300 | 2.5 | 5.5 | 1.2, 1.8, 2.8, 3.0, 3.1, 3.3 | 160 | 38 µA | ±2 | 60 | Low Dropout | 4-pin UDFN, 5-pin SOT-23 |
| MIC5512 | 300 | 2.5 | 5.5 | 1.2, 1.8, 2.8, 3.3 | 160 | 38 µA | ±2 | 65 | Low Dropout | 6-pin UDFN |
| MIC5514 | 300 | 2.5 | 5.5 | 1.2, 1.8, 2.8, 3.0, 3.3 | 160 | 38 µA | ±2 | 65 | Low Dropout | 6-pin UDFN |
| MCP1755 | 300 | 3.6 | 16 | 1.8–5.5 | 300 | 68 µA | ±0.85 | 80 | High Input, Low Dropout | 3-pin SOT-223, 8-pin DFN, 5-pin SOT-223, 5-pin SOT-23 |
| MCP1755S | 300 | 3.6 | 16 | 1.8–5.5 | 300 | 68 µA | ±0.85 | 80 | Low Dropout | 3-pin SOT-223, 8-pin DFN |
| MCP1824 | 300 | 2.1 | 6 | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0 | 200 | 120 µA | ±0.4 | 55 | High Accuracy | 5-pin SOT-223 ,5-pin SOT-23 |
| MCP1824S | 300 | 2.1 | 6 | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0 | 200 | 120 µA | ±0.4 | 55 | High Accuracy | 3-pin SOT-223, |
| TC1107 | 300 | 2.7 | 6 | 2.5, 2.7, 2.8, 3.0, 3.3, 5.0 | 240 | 50 µA | ±0.5 | 60 | Low Dropout | 8-pin MSOP, 8-pin SOIC 150mil |
| TC1108 | 300 | 2.7 | 6 | 2.5, 2.7, 2.8, 3.0, 3.3, 5.0 | 240 | 50 µA | ±0.5 | 60 | Low Dropout | 3-pin SOT-223 |
| TC1173 | 300 | 2.7 | 6 | 3.3, 5.0, 2.5, 2.7, 2.8, 3.0 | 240 | 50 µA | ±0.5 | 60 | Low Dropout | 8-pin MSOP, 8-pin SOIC 150mil |
| TC1174 | 300 | 2.7 | 6 | 1.23–5.5 | 270 | 50 µA | ±0.5 | 60 | Low Dropout | 8-pin MSOP, 8-pin SOIC 150mil |
| TC1269 | 300 | 2.7 | 6 | 2.5, 2.8, 3.0, 3.3, 5.0 | 240 | 50 µA | ±0.5 | 50 | Low Dropout | 8-pin MSOP |
| TC1300 | 300 | 2.7 | 6 | 2.5, 2.7, 2.8, 2.85, 3.0, 3.3 | 210 | 80 µA | ±0.5 | 60 | Low Dropout | 8-pin MSOP |
| MIC29201 | 400 | 2 | 26 | 3.3, 4.8, 5.0, 12 | 400 | 140 µA | ±1 | 70 | Load Dump, Reverse Battery Protection | 5-pin TO-220, 5-pin DDPAK, 8-pin SOIC |
| MIC29202 | 400 | 2 | 26 | Adj. | 400 | 140 µA | ±1 | 70 | Load Dump, Reverse Battery Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC29204 | 400 | 2 | 26 | 5.0, Adj. | 400 | 140 µA | ±1 | 70 | Load Dump, Reverse Battery Protection | 8-pin SOIC, 8-pin PDIP |
| MIC2920A | 400 | 2 | 26 | 3.3, 4.8, 5.0, 12 | 400 | 140 µA | ±1 | 70 | Load Dump, Reverse Battery Protection | 3-pin SOT-223, 3-pin TO-220 |
| MIC5325 | 400 | 1.7 | 5.5 | 1.2, 1.5, 1.8, 3.3, 3.6 | 110 | 35 µA | ±2 | 65 | Low Noise | 6-pin UDFN |
| MIC47050 | 500 | 1 | 3.6 | 1.2, 1.8, Adj. | 44 | 6 µA | ±0.5 | 50 | Ultra Low Dropout | 6-pin UDFN, 6-pin VDFN |
| MIC47053 | 500 | 1 | 3.6 | Adj. | 44 | 6 µA | ±2 | 55 | Ultra Low Dropout | 8-pin UDFN |
| MIC5209 | 500 | 2.5 | 16 | 1.8, 2.5, 3.0, 3.3, 3.6, 4.2, 5.0, Adj. | 350 | 8 mA | ±1 | 75 | High Input Voltage, Small Package | 8-pin SOIC, 3-pin SOT-223, 8-pin VDFN, 5-pin DDPAK |
| MIC5216 | 500 | 2.5 | 12 | 2.5, 3.3, 3.6, 5.0 | 300 | 8 mA | ±1 | 75 | High Input Voltage, Small Package | 8-pin MSOP, 5-pin SOT-23 |
| MIC5219 | 500 | 2.5 | 12 | 2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.1, 3.3, 3.6, 5.0, Adj. | 350 | 12 mA | ±1 | 75 | High Input Voltage, Small Package | 8-pin MSOP, 6-pin UDFN, 6-pin VDFN, 5-pin SOT-23 |
| MIC5237 | 500 | 2.5 | 16 | 2.5, 3.3, 5.0 | 300 | 8 mA | ±3 | 75 | High Input Voltage, Reverse Battery Protection | 3-pin TO-263, 3-pin TO-220 |
| MIC5239 | 500 | 2.3 | 30 | 1.5, 1.8, 2.5, 3.0, 3.3, 5.0, Adj. | 350 | 23 µA | ±1 | 50 | Reverse Battery and Current Protection | 8-pin MSOP, 8-pin SOIC, 3-pin SOT-223 |
| MIC5319 | 500 | 2.5 | 5.5 | 1.375, 1.8, 1.85, 2.5, 2.6, 2.7, 2.8, 2.85, 2.9, 3.0, 3.3, 5.0, Adj. | 200 | 90 µA | ±1 | 70 | High PSRR | 5-pin TSOT, 6-pin VDFN |
| MIC5524 | 500 | 2.5 | 5.5 | 1.2, 1.8, 2.8, 3.0, 3.3 | 260 | 38 µA | ±2 | 65 | Low Noise | 4-pin UDFN |
| MIC5528 | 500 | 2.5 | 5.5 | 3.3 | 260 | 38 µA | ±2 | 70 | Low Dropout | 6-pin UDFN, 6-pin X2DFN |
| MIC94305 | 500 | 1.8 | 3.6 | Input Follower | 170 | 150 µA | – | 0 | RippleBlocker | 6-pin UDFN |
| MIC94325 | 500 | 1.8 | 3.6 | Adj. | 100 | 170 µA | ±1 | 85 | RippleBlocker | 6-pin UDFN |
| MIC94345 | 500 | 1.8 | 3.6 | 1.2, 1.5, 1.8, 2.8, 3.3 | 100 | 170 µA | ±1 | 85 | RippleBlocker | 6-pin UDFN |
| MIC94355 | 500 | 1.8 | 3.6 | 1.2, 1.5, 1.8, 2.8, 3.3 | 100 | 170 µA | ±1 | 85 | RippleBlocker | 6-pin UDFN |
| MCP1725 | 500 | 2.3 | 6 | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0 | 210 | 120 µA | ±0.5 | 60 | Low Dropout | 8-pin DFN, 8-pin SOIC 150mil |
| MCP1825 | 500 | 2.1 | 6 | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0 | 210 | 120 µA | ±0.5 | 60 | Low Dropout | 5-pin TO-220, 5-pin DDPAK, 5-pin SOT-223 |
| MCP1825S | 500 | 2.1 | 6 | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0 | 300 | 120 µA | ±0.5 | 60 | Low Dropout | 3-pin TO-220, 3-pin SOT-223, 3-pin DDPAK |
| TC1262 | 500 | 2.7 | 6 | 2.5, 2.8, 3.0, 3.3, 5.0 | 350 | 80 µA | ±0.5 | 64 | Low Dropout | 3-pin TO-220, 3-pin SOT-223, 3-pin DDPAK |
| TC1263 | 500 | 2.7 | 6 | 2.5, 2.8, 3.0, 3.3, 5.0 | 350 | 80 µA | ±0.5 | 64 | Low Dropout | 5-pin TO-220, 5-pin DDPAK, 8-pin SOIC 150mil |
| MIC29371 | 750 | 4.3 | 26 | 3.3, 5.0, 12 | 370 | 160 µA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC29372 | 750 | 4.3 | 26 | Adj. | 370 | 160 µA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-220, 5-pin DDPAK |

## POWER MANAGEMENT: Single Output Linear Regulators (Continued)

| Part # | Output Current (mA) | VIN Min (V) | VIN Max (V) | VOUT (V) | Voltage Drop Typical (mV) | IGND Typical (µA) | Output Accuracy (%) | PSRR 1 kHz (dB) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MIC2937A | 750 | 4.3 | 26 | 3.3, 5.0, 12 | 370 | 160 µA | ±1 | – | Load Dump, Reverse Current Protection | 3-pin TO-263, 3-pin TO-220 |
| MIC3775 | 750 | 2.25 | 6 | 1.5, 1.65, 1.8, 2.5, 3.0, 3.3, Adj. | 280 | 6.5 mA | ±1 | 60 | Reverse Current Protection | 8-pin MSOP |
| MIC3975 | 750 | 2.25 | 16 | 1.65, 1.8, 2.5, 3.0, 3.3, 5.0, Adj. | 300 | 7.5 mA | ±1 | 55 | Reverse Current Protection | 8-pin MSOP |
| TC1264 | 800 | 2.7 | 6 | 1.8, 2.5, 3.0, 3.3 | 450 | 80 µA | ±0.5 | 64 | Low Dropout | 3-pin TO-220, 3-pin SOT-223 3-pin DDPAK |
| TC1265 | 800 | 2.7 | 6 | 1.8, 2.5, 3.0, 3.3 | 450 | 80 µA | ±0.5 | 64 | Low Dropout | 5-pin TO-220, 5-pin DDPAK, 8-pin SOIC 150mil |
| TC2117 | 800 | 2.7 | 6 | 1.8, 2.5, 3.0, 3.3 | 600 | 80 µA | ±0.5 | 55 | Low Dropout | 3-pin SOT-223, 3-pin DDPAK |
| MIC37100 | 1000 | 2.25 | 6 | 1.5, 1.65, 1.8, 2.5, 3.3 | 280 | 400 µA | ±1 | 50 | Reverse Battery and Current Protection | 3-pin SOT-223 |
| MIC37101 | 1000 | 2.25 | 6 | 1.5, 1.65, 1.8, 2.1, 2.5, 3.3 | 280 | 400 µA | ±1 | 50 | Reverse Battery and Current Protection | 8-pin SOIC |
| MIC37102 | 1000 | 2.25 | 6 | Adj | 280 | 400 µA | ±1 | 50 | Reverse Battery and Current Protection | 8-pin SOIC, 5-pin SPAK |
| MIC39100 | 1000 | 2.25 | 16 | 1.8, 2.5, 3.3, 5.0 | 410 | 6.5 mA | ±1 | 55 | Reverse Battery and Current Protection | 3-pin SOT-223 |
| MIC39101 | 1000 | 2.25 | 16 | 1.8, 2.5, 3.3, 5.0 | 410 | 6.5 mA | ±1 | 55 | Reverse Battery and Current Protection | 8-pin SOIC |
| MIC39102 | 1000 | 2.25 | 16 | Adj. | 410 | 6.5 mA | ±1 | 55 | Reverse Battery and Current Protection | 8-pin SOIC |
| MIC47100 | 1000 | 1 | 3.6 | 0.8, 1.0, 1.2, Adj. | 80 | 350 µA | ±0.5 | 80 | Ultra Low Dropout | 8-pin MSOP, 8-pin VDFN |
| MIC69101 | 1000 | 1.65 | 5.5 | 1.8 | 215 | 11 mA | ±2 | 55 | Low Dropout | 10-pin VDFN |
| MIC69103 | 1000 | 1.65 | 5.5 | Adj. | 215 | 11 mA | ±2 | 55 | Low Dropout | 10-pin VDFN |
| MCP1726 | 1000 | 2.3 | 6 | 0.8, 1.2, 1.8, 2.5, 3.3, 5.0 | 500 | 130 µA | ±0.5 | 54 | Low Dropout | 8-pin DFN, 8-pin SOIC 150mil |
| MCP1826 | 1000 | 2.3 | 6 | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0 | 225 | 120 µA | ±0.5 | 60 | Low Dropout | 5-pin TO-220, 5-pin DDPAK, 5-pin SOT-223 |
| MCP1826S | 1000 | 2.3 | 6 | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0 | 225 | 120 µA | ±0.5 | 60 | Low Dropout | 3-pin TO-220, 3-pin SOT-223, 3-pin DDPAK |
| MIC2940A | 1250 | 2 | 26 | 3.3, 5.0, 12 | 400 | 35 mA | ±1 | – | Load Dump, Reverse Current Protection | 3-pin TO-263, 3-pin TO-220 |
| MIC2941A | 1250 | 2 | 26 | Adj. | 400 | 35 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC29150 | 1500 | 2.25 | 26 | 3.3, 5.0, 12 | 350 | 22 mA | ±1 | – | Load Dump, Reverse Current Protection | 3-pin TO-263, 3-pin TO-220 |
| MIC29151 | 1500 | 2.25 | 26 | 3.3, 5.0, 12 | 350 | 22 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC29152 | 1500 | 2.25 | 26 | Adj. | 350 | 22 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-252, 5-pin TO-220, 5-pin DDPAK |
| MIC37139 | 1500 | 2.25 | 6 | 1.8, 2.5 | 500 | 17 mA | ±1 | 50 | Reverse Battery and Current Protection | Please call for package information |
| MIC37150 | 1500 | 2.25 | 6 | 1.5, 1.65, 1.8, 2.5, 3.3 | 325 | 17 mA | ±1 | 45 | Reverse Battery and Current Protection | 3-pin SPAK |
| MIC37151 | 1500 | 2.25 | 6 | 1.5, 1.65, 1.8, 2.5, 3.3 | 325 | 17 mA | ±1 | 45 | Reverse Battery and Current Protection | 5-pin SPAK |
| MIC37152 | 1500 | 2.25 | 6 | Adj. | 325 | 17 mA | ±1 | 45 | Reverse Battery and Current Protection | 8-pin SOIC, 5-pin SPAK |
| MIC37153 | 1500 | 2.25 | 6 | Adj. | 325 | 17 mA | ±1 | 45 | Reverse Battery and Current Protection | 8-pin SOIC |
| MIC39150 | 1500 | 2.25 | 16 | 1.65, 1.8, 2.5 | 375 | 17 mA | ±1 | 53 | Reverse Battery and Current Protection | 3-pin TO-263, 3-pin TO-220 |
| MIC39151 | 1500 | 2.25 | 16 | 1.65, 1.8, 2.5 | 375 | 17 mA | ±1 | 53 | Reverse Battery and Current Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC39152 | 1500 | 2.25 | 16 | Adj. | 375 | 17 mA | ±1 | 53 | Reverse Battery and Current Protection | 5-pin TO-252, 5-pin DDPAK |
| MIC47150 | 1500 | 1.4 | 6.5 | Adj. | 280 | 15 mA | ±1 | 55 | Low Dropout | 5-pin TO-252 |
| MIC49150 | 1500 | 1.4 | 6.5 | 0.9, 1.2, 1.5, 1.8, Adj. | 280 | 15 mA | ±1 | 57 | Low Dropout | 8-pin MSOP, 5-pin SPAK |
| MIC59150 | 1500 | 1 | 3.8 | Adj. | 100 | 12.5 mA | ±1 | 60 | Ultra Low Dropout | 8-pin SOIC |
| MIC61150 | 1500 | 1.1 | 3.6 | 1.0, Adj. | 75 | 7.6 mA | ±1 | 50 | Ultra Low Dropout, Soft Start | 10-pin MSOP, 10-pin VDFN |
| MCP1727 | 1500 | 2.3 | 6 | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0 | 330 | 120 µA | ±0.5 | 60 | Low Dropout | 8-pin DFN, 8-pin SOIC 150mil |
| MCP1827 | 1500 | 2.3 | 6 | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0 | 330 | 120 µA | ±0.5 | 60 | Low Dropout | 5-pin TO-220, 5-pin DDPAK |
| MCP1827S | 1500 | 2.3 | 6 | 0.8, 1.2, 1.8, 2.5, 3.0, 3.3, 5.0 | 330 | 120 µA | ±0.5 | 60 | Low Dropout | 3-pin TO-220, 3-pin DDPAK |
| MIC49200 | 2000 | 1.4 | 6.5 | 1.0, 1.8, Adj. | 400 | 15 mA | ±1 | 83 | Low Dropout | 5-pin SPAK |
| MIC68200 | 2000 | 1.65 | 5.5 | 1.2, 1.5, 1.8, 2.5, 3.3, Adj | 300 | 42 mA | ±1 | 60 | Low Dropout, Soft Start | 10-pin VDFN |
| MIC37252 | 2500 | 3 | 6 | Adj. | 550 | 40 mA | ±2 | 50 | Reverse Current Protection | 5-pin SPAK, 5-pin DDPAK |

## POWER MANAGEMENT: Single Output Linear Regulators (Continued)

| Part # | Output Current (mA) | $V_{IN}$ Min (V) | $V_{IN}$ Max (V) | $V_{OUT}$ (V) | Voltage Drop Typical (mV) | IGND Typical (µA) | Output Accuracy (%) | PSRR 1 kHz (dB) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MIC29300 | 3000 | 2.25 | 26 | 3.3, 5.0, 12 | 370 | 37 mA | ±1 | – | Load Dump, Reverse Current Protection | 3-pin TO-263, 3-pin TO-220 |
| MIC29301 | 3000 | 2.25 | 26 | 3.3, 5.0, 12 | 370 | 37 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC29302 | 3000 | 2.25 | 26 | Adj. | 370 | 37 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC29302A | 3000 | 3 | 16 | Adj. | 450 | 60 mA | ±1 | – | Reverse Battery and Current Protection | 5-pin TO-252, 5-pin DDPAK |
| MIC29302H | 3000 | 2.25 | 26 | Adj. | 370 | 37 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin DDPAK |
| MIC29303 | 3000 | 2.25 | 26 | Adj. | 370 | 37 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC29310 | 3000 | 2.3 | 16 | 3.3, 5.0 | 600 | 60 mA | ±1 | – | Load Dump, Reverse Current Protection | 3-pin TO-263, 3-pin TO-220 |
| MIC29312 | 3000 | 2.3 | 16 | Adj. | 600 | 60 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC35302 | 3000 | 2.25 | 6 | Adj. | 370 | 20 mA | ±1 | 50 | Reverse Battery and Current Protection | 5-pin TO-252 |
| MIC37300 | 3000 | 2.25 | 6 | 1.5, 1.65, 1.8, 2.5, 3.3 | 300 | 27 mA | ±1 | 50 | Reverse Current Protection | 3-pin SPAK |
| MIC37301 | 3000 | 2.25 | 6 | 1.5, 1.8, 2.5, 3.3 | 300 | 27 mA | ±1 | 50 | Reverse Current Protection | 8-pin SOIC, 5-pin SPAK |
| MIC37302 | 3000 | 2.25 | 6 | Adj. | 300 | 27 mA | ±1 | 50 | Reverse Current Protection | 5-pin SPAK, 5-pin DDPAK |
| MIC37303 | 3000 | 2.25 | 6 | Adj. | 300 | 27 mA | ±1 | 50 | Reverse Current Protection | 8-pin SOIC, 8-pin VDFN |
| MIC39300 | 3000 | 2.25 | 16 | 1.8, 2.5 | 385 | 45 mA | ±1 | – | Reverse Battery and Current Protection | 3-pin TO-263, 3-pin TO-220 |
| MIC39301 | 3000 | 2.25 | 16 | 1.8, 2.5 | 385 | 45 mA | ±1 | – | Reverse Battery and Current Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC39302 | 3000 | 2.25 | 16 | Adj. | 385 | 45 mA | ±1 | – | Reverse Battery and Current Protection | 5-pin DDPAK |
| MIC47300 | 3000 | 1.4 | 6.5 | Adj. | 230 | 25 mA | ±1 | – | Low Dropout | 5-pin TO-252 |
| MIC49300 | 3000 | 1.4 | 6.5 | 0.9, 1.2, 1.5, 1.8, Adj. | 280 | 25 mA | ±1 | – | Low Dropout | 5-pin SPAK |
| MIC59300 | 3000 | 1 | 3.8 | 1.2V, Adj. | 205 | 30 mA | ±1 | 65 | Low Dropout | 8-pin SOIC, 5-pin DDPAK |
| MIC61300 | 3000 | 1.1 | 3.6 | 1.0, Adj. | 150 | 7.6 mA | ±1 | 55 | Low Dropout, Soft Start | 10-pin MSOP, 10-pin VDFN |
| MIC69301 | 3000 | 1.65 | 5.5 | 1.2 | 275 | 32 mA | ±2 | 55 | Low Dropout | 8-pin SOIC, 5-pin SPAK, 5-pin DDPAK |
| MIC69302 | 3000 | 1.65 | 5.5 | Adj. | 275 | 32 mA | ±2 | 55 | Low Dropout | 5-pin SPAK, 5-pin DDPAK |
| MIC69303 | 3000 | 1.65 | 5.5 | Adj. | 275 | 32 mA | ±2 | 55 | High Current | 8-pin SOIC, 12-pin VDFN |
| MIC68400 | 4000 | 1.65 | 5.5 | 1.8, Adj. | 360 | 90 mA | ±2 | 50 | Low Dropout, Soft Start | 16-pin VQFN |
| MIC68401 | 4000 | 1.65 | 5.5 | Adj. | 360 | 90 mA | ±2 | 50 | Low Dropout, Soft Start | 16-pin VQFN |
| MIC29500 | 5000 | 2.25 | 26 | 3.3, 5.0, 12 | 370 | 70 mA | ±1 | – | Load Dump, Reverse Current Protection | 3-pin TO-220 |
| MIC29501 | 5000 | 2.25 | 26 | 3.3, 5.0, 12 | 370 | 70 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC29502 | 5000 | 2.25 | 26 | Adj. | 370 | 70 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC29503 | 5000 | 2.25 | 26 | Adj. | 370 | 70 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC29510 | 5000 | 2.3 | 16 | 3.3, 5.0 | 700 | 100 mA | ±1 | – | Load Dump, Reverse Current Protection | 3-pin TO-220 |
| MIC29512 | 5000 | 2.3 | 16 | Adj. | 700 | 100 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-220 |
| MIC37501 | 5000 | 2.3 | 6 | 1.5, 1.65, 1.8, 2.5, 3.3 | 330 | 57 mA | ±1 | – | Reverse Current Protection | 7-pin SPAK |
| MIC37502 | 5000 | 2.3 | 6 | Adj. | 330 | 57 mA | ±1 | – | Reverse Current Protection | 7-pin SPAK, 5-pin DDPAK |
| MIC39500 | 5000 | 2.25 | 16 | 1.8, 2.5 | 400 | 70 mA | ±1 | 30 | Reverse Battery and Current Protection | 3-pin TO-263, 3-pin TO-220 |
| MIC39501 | 5000 | 2.25 | 16 | 1.8, 2.5 | 400 | 70 mA | ±1 | 30 | Reverse Battery and Current Protection | 5-pin TO-220, 5-pin DDPAK |
| MIC49500 | 5000 | 1.4 | 6 | 0.9, 1.2, Adj. | 290 | 55 mA | ±1 | 75 | Low Dropout | 7-pin SPAK |
| MIC69502 | 5000 | 1.65 | 5.5 | Adj. | 250 | 54 mA | ±1 | 52 | High Current | 7-pin SPAK |
| MIC29712 | 7500 | 2.3 | 16 | Adj. | 700 | 250 mA | ±2 | – | High Current | 5-pin TO-220 |
| MIC29751 | 7500 | 2.5 | 26 | 3.3, 5.0 | 425 | 120 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-247 |
| MIC29752 | 7500 | 2.5 | 26 | Adj. | 425 | 120 mA | ±1 | – | Load Dump, Reverse Current Protection | 5-pin TO-247 |

## POWER MANAGEMENT: Multiple Output Linear Regulators

| Part # | Product Type | $I_{OUT}$ #1 | $I_{OUT}$ #2 | $I_{OUT}$ #3 | $I_{OUT}$ #4 | $V_{IN}$ Min. (V) | $V_{IN}$ Max. (V) | $V_{OUT}$ (V) | Voltage Drop Typ. (mV) | IGND Typ. (µA) | PSRR 1kHz (dB) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MIC2210 | Dual LDOs | 150 mA | 300 mA | – | – | 2.25 | 5.5 | Please Refer to Datasheet | 120/140 | 48/60 µA | 60 | 10-pin VDFN |
| MIC2211 | Dual LDOs | 150 mA | 300 mA | – | – | 2.25 | 5.5 | Please Refer to Datasheet | 120/140 | 48/60 µA | 60 | 10-pin VDFN |
| MIC2212 | Dual LDOs | 150 mA | 300 mA | – | – | 2.25 | 5.5 | Please Refer to Datasheet | 120/140 | 48/60 µA | 60 | 10-pin VDFN |
| MIC2213 | Dual LDOs | 150 mA | 300 mA | – | – | 2.25 | 5.5 | Please Refer to Datasheet | 120/140 | 48/60 µA | 60 | 10-pin VDFN, 16-pin VQFN |
| MIC2214 | Dual LDOs | 150 mA | 300 mA | – | – | 2.25 | 5.5 | Please Refer to Datasheet | 120/140 | 48/60 µA | 60 | 10-pin VDFN, 16-pin VQFN |
| MIC2215 | Multi-Channel LDOs | 250 mA | 250 mA | 250 mA | – | 2.25 | 5.5 | Please Refer to Datasheet | 100 | 110 µA | 70 | 16-pin VQFN |
| MIC2219 | Dual LDOs | 150 mA | 300 mA | – | – | 2.25 | 5.5 | Please Refer to Datasheet | 120 | 48 µA | 60 | 10-pin VDFN |
| MIC5202 | Dual LDOs | 100 mA | 100 mA | – | – | 2.5 | 26 | Please Refer to Datasheet | 225 | 170 µA | 75 | 8-pin SOIC |
| MIC5208 | Dual LDOs | 50 mA | 50 mA | – | – | 2.5 | 16 | Please Refer to Datasheet | 250 | 180 µA | – | 8-pin MSOP |
| MIC5210 | Dual LDOs | 150 mA | 150 mA | – | – | 2.5 | 16 | Please Refer to Datasheet | 165 | 80 µA | 75 | 8-pin MSOP |
| MIC5211 | Dual LDOs | 80 mA | 80 mA | – | – | 2.5 | 16 | Please Refer to Datasheet | 250 | 90 µA | 60 | 6-pin SOT-23 |
| MIC5212 | Dual LDOs | 500 mA | 500 mA | – | – | 4 | 16 | Please Refer to Datasheet | 350 | 1.5mA | 75 | 8-pin SOIC |
| MIC5264 | Dual LDOs | 150 mA | 150 mA | – | – | 2.7 | 5.5 | Please Refer to Datasheet | 210 | 75 µA | 64 | 10-pin VDFN |
| MIC5310 | Dual LDOs | 150 mA | 150 mA | – | – | 2.3 | 5.5 | Please Refer to Datasheet | 35 | 85 µA | 70 | 8-pin UDFN, 8-pin VDFN |
| MIC5311 | Dual LDOs | 300 mA | 300 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 120 | 28 µA | 60 | 10-pin VDFN |
| MIC5312 | Dual LDOs | 300 mA | 300 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 120 | 28 µA | 60 | 10-pin VDFN |
| MIC5315 | Dual LDOs | 300 mA | 300 mA | – | – | 1.7 | 5.5 | Please Refer to Datasheet | 85 | 30 µA | 65 | 10-pin UDFN |
| MIC5316 | Dual LDOs | 300 mA | 300 mA | – | – | 1.7 | 5.5 | Please Refer to Datasheet | 85 | 30 µA | 65 | 12-pin UDFN |
| MIC5320 | Dual LDOs | 150 mA | 150 mA | – | – | 2.3 | 5.5 | Please Refer to Datasheet | 35 | 85 µA | 65 | 6-pin TSOT, 6-pin UDFN, 6-pin WDFN |
| MIC5321 | Dual LDOs | 150 mA | 150 mA | – | – | 2.3 | 5.5 | Please Refer to Datasheet | 35 | 85 µA | 75 | 6-pin TSOT, 6-pin UDFN, 6-pin WDFN |
| MIC5322 | Dual LDOs | 150 mA | 150 mA | – | – | 2.3 | 5.5 | Please Refer to Datasheet | 35 | 150 µA | 75 | 6-pin UDFN |
| MIC5330 | Dual LDOs | 300 mA | 300 mA | – | – | 2.3 | 5.5 | Please Refer to Datasheet | 75 | 85 µA | 70 | 8-pin VDFN |
| MIC5331 | Dual LDOs | 300 mA | 300 mA | – | – | 2.3 | 5.5 | Please Refer to Datasheet | 120 | 40 µA | 65 | 8-pin UDFN |
| MIC5332 | Dual LDOs | 300 mA | 300 mA | – | – | 2.3 | 5.5 | Please Refer to Datasheet | 120 | 40 µA | 65 | 8-pin UDFN |
| MIC5333 | Dual LDOs | 300 mA | 300 mA | – | – | 2.3 | 5.5 | Please Refer to Datasheet | 120 | 40 µA | 65 | 10-pin UDFN |
| MIC5335 | Dual LDOs | 300 mA | 300 mA | – | – | 2.3 | 5.5 | Please Refer to Datasheet | 75 | 90 µA | 65 | 6-pin UDFN |
| MIC5338 | Dual LDOs | 300 mA | 300 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 220 | 38 µA | 55 | 6-pin UDFN |
| MIC5339 | Dual LDOs | 300 mA | 300 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 220 | 38 µA | 55 | 6-pin UDFN |
| MIC5350 | Dual LDOs | 300 mA | 500 mA | – | – | 2.6 | 5.5 | Please Refer to Datasheet | 75/125 | 95 µA | 50 | 8-pin UDFN |
| MIC5355 | Dual LDOs | 500mA | 500 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 350 | 38 µA | 55 | 8-pin MSOP |
| MIC5356 | Dual LDOs | 500mA | 500 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 350 | 38 µA | 55 | 8-pin MSOP, 8-pin VDFN |
| MIC5357 | Dual LDOs | 500mA | 500 mA | – | – | 2.6 | 5.5 | Please Refer to Datasheet | 130 | 95 µA | 70 | 8-pin MSOP |
| MIC5370 | Dual LDOs | 150mA | 150 mA | – | – | 2.3 | 5.5 | Please Refer to Datasheet | 155 | 32 µA | 60 | 6-pin UDFN |
| MIC5371 | Dual LDOs | 150mA | 150 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 155 | 32 µA | 60 | 6-pin UDFN |
| MIC5373 | Multi-Channel LDOs | 200mA | 200 mA | 200 mA | – | 1.7 | 5.5 | Please Refer to Datasheet | 170 | 32 µA | 55 | 16-pin UQFN |
| MIC5374 | Multi-Channel LDOs | 200 mA | 200 mA | 200 mA | 1 mA | 1.7 | 5.5 | Please Refer to Datasheet | 170 | 42 µA | 55 | 16-pin UQFN |
| MIC5380 | Dual LDOs | 150 mA | 150 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 155 | 32 µA | 60 | 10-pin UQFN |
| MIC5381 | Dual LDOs | 150 mA | 150 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 155 | 32 µA | 60 | 10-pin UQFN |
| MIC5383 | Multi-Channel LDOs | 200 mA | 200 mA | 200 mA | – | 1.7 | 5.5 | Please Refer to Datasheet | 170 | 32 µA | 55 | 16-pin UQFN |
| MIC5384 | Multi-Channel LDOs | 200 mA | 200 mA | 200 mA | 1 mA | 1.7 | 5.5 | Please Refer to Datasheet | 170 | 42 µA | 55 | 16-pin UQFN |
| MIC5385 | Multi-Channel LDOs | 150 mA | 150 mA | 150 mA | – | 2.5 | 5.5 | Please Refer to Datasheet | 180 | 32 µA | 70 | 8-pin UDFN |
| MIC5387 | Multi-Channel LDOs | 150 mA | 150 mA | 150 mA | – | 2.5 | 5.5 | Please Refer to Datasheet | 180 | 32 µA | 70 | 6-pin UDFN |
| MIC5388 | Dual LDOs | 200 mA | 200 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 175 | 32 µA | 73 | 6-pin WLCSP |

## POWER MANAGEMENT: Multiple Output Linear Regulators (Continued)

| Part # | Product Type | $I_{OUT}$ #1 | $I_{OUT}$ #2 | $I_{OUT}$ #3 | $I_{OUT}$ #4 | $V_{IN}$ Min. (V) | $V_{IN}$ Max. (V) | $V_{OUT}$ (V) | Voltage Drop Typ. (mV) | IGND Typ. (µA) | PSRR 1kHz (dB) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MIC5389 | Dual LDOs | 200 mA | 200 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 175 | 32 µA | 73 | 6-pin WLCSP |
| MIC5392 | Dual LDOs | 150 mA | 150 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 155 | 57 µA | 60 | 6-pin UDFN, 6-pin X2DFN |
| MIC5393 | Dual LDOs | 150 mA | 150 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 155 | 57 µA | 60 | 6-pin X2DFN |
| MIC5396 | Dual LDOs | 300 mA | 300 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 160 | 37 µA | 60 | 8-pin UDFN, 8-pin X2DFN |
| MIC5397 | Dual LDOs | 300 mA | 300 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 160 | 37 µA | 60 | 8-pin UDFN, 8-pin X2DFN |
| MIC5398 | Dual LDOs | 300 mA | 300 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 160 | 37 µA | 60 | 8-pin X2DFN |
| MIC5399 | Dual LDOs | 300 mA | 300 mA | – | – | 2.5 | 5.5 | Please Refer to Datasheet | 160 | 37 µA | 60 | 8-pin UDFN, 8-pin X2DFN |
| MIC68220 | Dual LDOs | 2.0A | 2.0A | – | – | 1.65 | 5.5 | Please Refer to Datasheet | 300 | 15 mA | 40 | 20-pin VDFN |
| TC1307 | Multi-Channel LDOs | 150 mA | 150 mA | 150 mA | 150 mA | 2.7 | 6 | Please Refer to Datasheet | 200 | 220 µA | 60 | 16-pin QSOP |
| TC1301A | Dual LDOs | 300 mA | 150 mA | – | – | 2.7 | 6 | Please Refer to Datasheet | 104 | 103 µA | 58 | 8-pin MSOP, 8-pin DFN |
| TC1301B | Dual LDOs | 300 mA | 150 mA | – | – | 2.7 | 6 | Please Refer to Datasheet | 104 | 114 µA | 58 | 8-pin MSOP, 8-pin DFN |
| TC1302A | Dual LDOs | 300 mA | 150 mA | – | – | 2.7 | 6 | Please Refer to Datasheet | 104 | 103 µA | 58 | 8-pin MSOP, 8-pin DFN |
| TC1302B | Dual LDOs | 300 mA | 150 mA | – | – | 2.7 | 6 | Please Refer to Datasheet | 104 | 114 µA | 58 | 8-pin MSOP, 8-pin DFN |

## POWER MANAGEMENT: Linear Regulators – LDO Controller and SIM Card

| Part # | Product Type | $V_{IN}$ Min. (V) | $V_{IN}$ Max. (V) | $V_{OUT}$ (V) | IGND Typ. (µA) | $V_{REF}$ (V) | $V_{EN}$ (V) | Internal Charge Pump | External N-Ch. MOSFET | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MIC5156 | LDO Controllers | 3 | 36 | 3.3, 5.0, Adj. | 2.7 | 1.235 | 2.4 | – | Yes | 8-pin SOIC, 8-pin PDIP |
| MIC5157 | LDO Controllers | 3 | 36 | 3.3, 5.0, 12 | 4.5 | 1.235 | 2.4 | Yes | Yes | 14-pin PDIP, 14-pin SOIC 150mil |
| MIC5158 | LDO Controllers | 3 | 36 | 5.0, Adj. | 4.5 | 1.235 | 2.4 | Yes | Yes | 14-pin PDIP, 14-pin SOIC 150mil |
| MIC5159 | LDO Controllers | 1.65 | 5.5 | 1.8, 3.0, Adj. | 10 | 1.235 | 1.2 | – | Yes | 6-pin SOT-23 |
| MIC5190 | LDO Controllers | 0.9 | 5.5 | Adj. down to 0.5V | 15 | 0.5 | 0.8 | – | Yes | 10-pin MSOP, 10-pin VDFN |
| MIC5191 | LDO Controllers | 1 | 5.5 | Adj. down to 1.0V | 15 | 1 | 0.8 | – | Yes | 10-pin MSOP, 10-pin VDFN |
| MIC4555 | SIM Card Lvl Shifter with 50 mA LDO | 2.7 | 5.5 | 1.8, 3.3 | 41/79 | – | – | – | – | 16-pin VQFN |

## POWER MANAGEMENT: DDR Termination Regulators

| Part # | $I_{OUT}$ | $V_{IN}$ Min. (V) | $V_{IN}$ Max. (V) | $V_{OUT}$ (V) | PWR Good | VTT Accuracy | External Transistor | Sync Buck | Frequency | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MIC5162 | ±7A | 1.35 | 6 | 1/2 of $V_{IN}$ | – | ±5 mV | ✓ | – | – | | 10-pin MSOP |
| MIC5163 | ±7A | 0.75 | 6 | 1/2 of $V_{IN}$ | – | ±5 mV | ✓ | – | – | Low Voltage | 10-pin MSOP |
| MIC5164 | ±7A | 1.35 | 6 | 1/2 of $V_{IN}$ | ✓ | ±5 mV | ✓ | – | – | | 10-pin MSOP |
| MIC5165 | ±7A | 0.75 | 6 | 1/2 of $V_{IN}$ | ✓ | ±5 mV | ✓ | – | – | Low Voltage | 10-pin MSOP |
| MIC5166 | ±3A | 0.9 | 3.6 | 1/2 of $V_{IN}$ | ✓ | ±25 mV | – | – | – | DDR 1, 2, 3, 4 | 3 × 3 DFN |
| MIC5167 | ±6A | 2.6 | 5.5 | Adj. down to 0.35V | ✓ | ±12 mV | – | ✓ | 1 MHz | Integrated Sync Buck | 4 × 4 DFN |

## POWER MANAGEMENT: High-Voltage Linear Regulators

| Part # | Input to Output Voltage Differential (Min.) | Input to Output Voltage Differential (Max.) | Output Voltage (V) | Max Output Current (mA) | Typical Line Regulation (%/V) | Typical Load Regulation (%/mA) | Packages |
|---|---|---|---|---|---|---|---|
| LR8 | 12 | 450 | 1.2–440 | 10 | 0.003 | 0.15 | 3-Lead TO-252, 3-Lead TO-92, 3-Lead SOT-89 |
| LR12 | 12 | 100 | 1.2–88 | 50 | 0.003 | 0.06 | 3-Lead TO-252, 8-Lead SOIC, 3-Lead TO-92 |
| LR645 | 15 | 450 | 10 | 3 | 0.0001 | 0.50 | 8-Lead SOIC, 3-Lead TO-92, 3-Lead TO-220, 3-Lead SOT-89 |
| LR745 | 25 | 450 | 20 | 2 | 0.0001 | 0.50 | 3-Lead TO-92, 3-Lead SOT-89 |

## POWER MANAGEMENT: Single Output Switching Regulators (Buck)

| Part # | Input Voltage Range (V) | Output Voltage (V) | Operating Junction Temperature Range (°C) | Switching Frequency (kHz) | Output Current (mA) | Features | Packages |
|---|---|---|---|---|---|---|---|
| LX7167A | 3.0 to 5.5 | 0.6 TO 3.3 | –10 to +85 | 3000 | 2400 | Skip-mode, UVLO, OV, Power Good | 8-pin 2 x 2 DFN |
| LX7176 | 3.0 to 5.5 | 0.6 TO 3.3 | 0 to +85 | 1650 | 3000 | PWM, 100% Duty Cycle, UVLO, OV, Power Good | 12-pin 2 x 2 QFN |
| LX7176A | 3.0 to 5.5 | 0.6 TO 3.3 | 0 to +85 | 1650 | 4000 | PFM/PWM, 100% Duty Cycle, UVLO, OV, Power Good | 12-pin 2 x 2 QFN |
| LX7180A | 3.0 to 5.5 | 0.6 TO 3.3 | 0 to +85 | 1650 | 4000 | I²C Programmable, Power Save Mode, Power Good | 12-pin 2 x 2 QFN |
| LX7165/7178 | 3.0 to 5.5 | 0.6 TO 3.3 | 0 to +85 | 1875 | 5000 | I²C Programmable, Power Save Mode, Power Good | 1.6 x 2 WLCSP |
| LX7219/7220 | 2.7 to 5.5 | 0.6 TO 3.3 | –40 to +85 | 1200 | 6000 | I²C Programmable, Power Save Mode, Power Good | 14-pin 2 x 3 VQFN |
| MCP1601 | 2.7 to 5.5 | 0.9V to $V_{IN}$ | –40 to +85 | 750 | 500 | UVLO, Auto-switching, LDO | 8-pin MSOP |
| MCP1602 | 2.7 to 5.5 | 0.8 to 4.5 | –40 to +85 | 2000 | 500 | PFM, PWM auto-switching, UVLO, soft start, power good indicator | 10-pin MSOP, 10-pin 3 × 3 DFN |
| MCP1603 | 2.7 to 5.5 | 0.8 to 4.0 | –40 to +85 | 2000 | 500 | Overtemperature and overcurrent protection | 5-pin TSOT-23, 8-pin 2 × 3 DFN |
| MCP1612 | 2.7 to 5.5 | 0.8 to 5.5 | –40 to +85 | 1400 | 1000 | Overall efficiency > 94%, Soft start, overtemperature and overcurrent protection | 8-pin MSOP, 8-pin 3 × 3 DFN |
| MIC2245 | 2.7 to 5.5 | Adj. | –40 to +125 | 4,000 | 500 | LDO Standby Mode and Low Q current | 10-pin 3 × 3 MLF |
| MIC23030 | 2.7 to 5.5 | 1.0, 1.2, 1.5, 1.8, Adj. | –40 to +125 | 8,000 | 400 | HyperLight Load® mode | 6-pin 1.6 × 1.6 MLF |
| MIC23031 | 2.7 to 5.5 | 1.0, 1.2, 1.5, 1.8, Adj. | –40 to +125 | 4,000 | 400 | HyperLight Load mode | 6-pin 1.6 × 1.6 MLF |
| MIC23050 | 2.7 to 5.5 | 1.0, 1.2, 1.8, 3.3 | –40 to +125 | 4,000 | 600 | HyperLight Load mode | 8-pin 2 × 2 MLF |
| MIC23051 | 2.7 to 5.5 | 1–1.2, 1–1.8, 1.15–1.4, 0.95–1.25 | –40 to +125 | 4,000 | 600 | HyperLight Load mode, voltage scaling | 8-pin 2 × 2 MLF |
| MIC23150 | 2.7 to 5.5 | 1.0, 1.2, 1.35, 1.8, 3.3 | –40 to +125 | 4,000 | 2,000 | HyperLight Load mode | 8-pin 2 × 2 MLF |
| MIC23153 | 2.7 to 5.5 | 1.8, Adj. | –40 to +125 | 4,000 | 2,000 | Power Good, HypperLight Load mode | 10-pin 2.5 × 2.5 MLF |
| MIC23155 | 2.7 to 5.5 | 1.8, Adj. | –40 to +125 | 3,000 | 2,000 | Power Good, HypperLight Load mode | 10-pin 2.5 × 2.5 MLF |
| MIC23303 | 2.7 to 5.5 | Adj. | –40 to +125 | 4,000 | 3,000 | Power Good, HypperLight Load mode | 12-pin 3 × 3 DFN |
| MIC23201 | 2.7 to 5.5 | Adj. | –40 to +125 | 2,000 | 2,000 | Power Good | 12-pin 3 × 3 DFN |
| MIC2202 | 2.3 to 5.5 | Adj. | –40 to +125 | 1,600–2,500 | 600 | | 10-pin MSOP, 10-pin 3 × 3 MLF |
| MIC2204 | 2.3 to 5.5 | Adj. | –40 to +125 | 2,000 | 600 | | 10-pin MSOP, 10-pin 3 × 3 MLF |
| MIC2267 | 3 to 5.5 | Adj. | –40 to +125 | 400–1,500 | 2,000 | Power Good | 12-pin 3 × 3 MLF |
| MIC2207 | 2.7 to 5.5 | Adj. | –40 to +125 | 2,000 | 3,000 | Power Good | 12-pin 3 × 3 MLF |
| MIC2208 | 2.7 to 5.5 | Adj. | –40 to +125 | 1,000 | 3,000 | Power Good | 12-pin 3 × 3 MLF |
| MIC22200 | 2.6 to 5.5 | Adj. | –40 to +125 | 800–1,200 | 3,000 | Power Good | 12-pin 3 × 3 MLF |
| MIC22400 | 2.6 to 5.5 | Adj. | –40 to +125 | 300–4,000 | 4,000 | Power Good | 12-pin 3 × 3 MLF |
| MIC22601 | 2.6 to 5.5 | Adj. | –40 to +125 | 4,000 | 6,000 | Power Good | 24-pin 4 × 4 MLF |
| MIC22602 | 2.6 to 5.5 | Adj. | –40 to +125 | 1,000 | 6,000 | Power Good | 24-pin 4 × 4 MLF |
| MIC22700 | 2.6 to 5.5 | Adj. | –40 to +125 | 1,000 | 7,000 | Power Good | 24-pin 4 × 4 MLF |
| MIC22950 | 2.6 to 5.5 | Adj. | –40 to +125 | 400–2,000 | 10,000 | Power Good | 32-pin 5 × 5 MLF |
| MCP16311 | 4.4 to 30.0 | 2.0 to 24.0 | –40 to +125 | 500 | 1000 | PFM/PWM operation, enable function | 8-pin MSOP, 8-pin 2 × 3 TDFN |
| MCP16312 | 4.4 to 30.0 | 2.0 to 24.0 | –40 to +125 | 500 | 1000 | PWM operation, enable function | 8-pin MSOP, 8-pin 2 × 3 TDFN |
| MCP16301 | 4.0 to 30 | 2.0 to 15 | –40 to +85 | 500 | 600 | Integrated N-channel, UVLO, Soft start, overtemperature protection | 6-pin SOT-23 |
| MIC24045 | 4.5 to 19 | 0.64 to 5.25 | –40 to +125 | 310–1200 | 5000 | I²C Programmable, 4.5V–19V Input, 5A Step-Down Converter | 20-pin 3 × 3 QFN |
| TC105 | 2.2 to 10 | 3.0, 3.3, 5.0 | –40 to +85 | 300 | 1000 | Low power shutdown mode | 5-pin SOT-23A |
| MIC24046 | 4.5 to 19 | 0.7 to 3.3 | –40 to +125 | 400–790 | 5000 | Pin-Programmable, 4.5V–19V Input, 5A Step-Down Converter | 20-pin 3 × 3 QFN |
| MIC24051 | 4.5 to 19 | Adj. | –40 to +125 | 600 | 6000 | Power Good, Soft Start, Architecture Regulation Scheme | 28-pin 5 × 6 QFN |
| MIC24052 | 4.5 to 19 | Adj. | –40 to +125 | 600 | 6000 | Power Good, Soft Start, HyperLight Load mode | 28-pin 5 × 6 QFN |
| MIC24053 | 4.5 to 19 | Adj. | –40 to +125 | 600 | 9000 | Power Good, Soft Start, Architecture Regulation Scheme | 28-pin 5 × 6 QFN |
| MIC24054 | 4.5 to 19 | Adj. | –40 to +125 | 600 | 9000 | Power Good, Soft Start, HyperLight Load mode | 28-pin 5 × 6 QFN |
| MIC24055 | 4.5 to 19 | Adj. | –40 to +125 | 600 | 12000 | Power Good, Soft Start, Architecture Regulation Scheme | 28-pin 5 × 6 QFN |
| MIC24056 | 4.5 to 19 | Adj. | –40 to +125 | 600 | 12000 | Power Good, Soft Start, HyperLight Load mode | 28-pin 5 × 6 QFN |
| MIC26601 | 4.5 to 28 | Adj. | –40 to +125 | 600 | 6000 | Power Good, Soft Start, Hyper Speed Control®architecture | 28-pin 5 × 6 QFN |
| MIC26603 | 4.5 to 28 | Adj. | –40 to +125 | 600 | 6000 | Power Good, Soft Start, HyperLight Load mode | 28-pin 5 × 6 QFN |
| MIC26603Z | 4.5 to 28 | Adj. | –40 to +125 | 600 | 6000 | Power Good, Soft Start, HyperLight Load mode | 28-pin 5 × 6 QFN |
| MIC26901 | 4.5 to 28 | Adj. | –40 to +125 | 600 | 9000 | Power Good, Soft Start, Hyper Speed Control architecture | 28-pin 5 × 6 QFN |
| MIC26903 | 4.5 to 28 | Adj. | –40 to +125 | 600 | 9000 | Power Good, Soft Start, HyperLight Load mode | 28-pin 5 × 6 QFN |
| MIC26950 | 4.5 to 26 | Adj. | –40 to +125 | 300 | 12000 | Soft Start, Architecture Regulation Scheme: Hyper Speed Control architecture, Thermal Shutdown | 28-pin 5 × 6 QFN |

## POWER MANAGEMENT: Single Output Switching Regulators (Buck) (Continued)

| Part # | Input Voltage Range (V) | Output Voltage (V) | Operating Junction Temperature Range (°C) | Switching Frequency (kHz) | Output Current (mA) | Features | Packages |
|---|---|---|---|---|---|---|---|
| MIC27600 | 4.5 to 36 | Adj. | –40 to +125 | 300 | 7000 | Soft Start, Architecture Regulation Scheme: Hyper Speed Control architecture, Thermal Shutdown | 28-pin 5 × 6 QFN |
| MIC4680 | 4 to 34 | 3.3, 5.0, Adj. | –40 to +125 | 200 | 1,300 | | 8-pin SOIC |
| MIC4681 | 4 to 30 | Adj. | –40 to +125 | 400 | 2,000 | | 8-pin SOIC |
| MIC4682 | 4 to 34 | Adj. | –40 to +125 | 200 | 2,000 | | 8-pin SOIC |
| MIC4684 | 4 to 30 | Adj. | –40 to +125 | 200 | 2,000 | | 8-pin SOIC |
| MIC4685 | 4 to 30 | Adj. | –40 to +125 | 200 | 3,000 | | 7-pin SPAK |
| MCP16331 | 4.4 to 50 | 2.0 to 24.0 | –40 to +125 | 500 | 1000 | Integrated N-channel, UVLO, Soft start, Overtemperature Protection | 6-pin SOT-23, 8-pin 2 x 3 TDFN |
| MIC28510 | 4.5 to 75 | Adj. | –40 to +125 | 100–500 | 4000 | Soft Start, Architecture Regulation Scheme: Hyper Speed Control architecture, Thermal Shutdown | 28-pin 5 × 6 QFN |
| MIC28511-1 | 4.6 to 60 | Adj. | –40 to +125 | 200–680 | 3000 | Power Good, Soft Start, HyperLight Load® mode | 24-pin 3 × 4 FCQFN |
| MIC28511-2 | 4.6 to 60 | Adj. | –40 to +125 | 200–680 | 3000 | Power Good, Soft Start, Hyper Speed Control architecture | 24-pin 3 × 4 FCQFN |
| MIC28514 | 4.5 to 75 | 0.6 to 32 | –40 to +125 | 270–800 | 5000 | Adj. Soft Start, Power Good, Internal Compensation, Enable, Pre-bias Start Up | 32-pin 6 × 6 VQFN |
| MIC28515 | 4.5 to 75 | 0.6 to 32 | –40 to +125 | 270–800 | 5000 | Selectable Operating Mode, Power Good, Internal Compensation, Enable, Pre-Bias Start Up | 32-pin 6 × 6 VQFN |
| MIC28512-1 | 4.6 to 70 | Adj. | –40 to +125 | 200–680 | 2000 | Power Good, Soft Start, HyperLight Load mode | 24-pin 3 × 4 FCQFN |
| MIC28512-2 | 4.6 to 70 | Adj. | –40 to +125 | 200–680 | 2000 | Power Good, Soft Start, Hyper Speed Control architecture | 24-pin 3 × 4 FCQFN |
| MIC28513-1 | 4.6 to 45 | Adj. | –40 to +125 | 200–680 | 4000 | Power Good, Soft Start, Hyper Speed Control architecture | 24-pin 3 × 4 FCQFN |
| MIC28513-2 | 4.6 to 45 | Adj. | –40 to +125 | 200–680 | 4000 | Power Good, Soft Start, Hyper Speed Control architecture | 24-pin 3 × 4 FCQFN |
| MIC4930 | 2.7 to 5.5 | Adj. | –40 to +125 | 3300 | 3000 | Power Good, Safe Start, Thermal Shutdown and Current Limit | 10-pin 3 × 4 DFN |
| MIC4950 | 2.7 to 5.5 | Adj. | –40 to +125 | 3300 | 5000 | Power Good, Safe Start, Thermal Shutdown and Current Limit | 8-pin SOIC, 10-pin 3 × 4 DFN |

## POWER MANAGEMENT: Single Output Switching Regulators (Boost)

| Part # | Input Voltage Range (V) | Output Voltage (V) | Operating Junction Temperature Range (°C) | Switching Frequency (kHz) | Output Switch Current (mA) | Features | Packages |
|---|---|---|---|---|---|---|---|
| MCP1623/4 | 0.65 to 5.5 | 2.0 to 5.5 | –40 to +85 | 500 | 425 | Integrated synchronous boost regulator, 0.65V start-up voltage, soft start, true load disconnect | 6-pin SOT-23, 8-pin (2 × 3) DFN |
| MCP1642B/D | 0.65 to 5.5 | 1.8 to 5.5 | –40 to +85 | 1000 | 1800 | Integrated synchronous boost regulator, 0.65V start-up voltage, soft start, enable, power good output, true load disconnect or input-to-output bypass option | 8-pin MSOP, 8-pin (2 × 3) DFN |
| MCP16251/2 | 0.82 to 5.5 | 1.8 to 5.5 | –40 to +85 | 500 | 650 | True load disconnect shutdown (MCP16251)/Input to output bypass shutdown (MCP16252) | 6-pin SOT-23, 8-pin (2 × 3) DFN |
| MCP1640/B/C/D | 0.65 to 5.5 | 2.0 to 5.5 | –40 to +85 | 500 | 800 | Integrated synchronous boost regulator, 0.65V start-up voltage, Soft start, True load disconnect or input-to-output bypass option | 6-pin SOT-23, 8-pin (2 × 3) DFN |
| MCP1643 | 0.5 to 5.5 | 0.6 to 5.0 | –40 to +85 | 1000 | 1600 | True load disconnect, Shutdown | 8-pin MSOP, 8-pin (2 × 3) DFN |
| MCP1665 | 2.7 to 5 | Up to 32 | –40 to +85 | 500 | 3600 | Pin selectable PWM or PFM/PWM mode | 10-pin (2 × 2) VQFN |
| MCP1663/4 | 2.4 to 5.5 | Up to 32 | –40 to +85 | 500 | 1800 | High-efficiency (up to 92%), fixed-frequency, non-synchronous, 300 mV feedback for LED driving (MCP1664) | 5-pin SOT-23, 8-pin (2 × 3) TDFN |
| MCP1661/2 | 2.4 to 5.5 | Up to 32 | –40 to +85 | 500 | 1300 | Non-synchronous, Soft start, Enable, 300 mV feedback for LED driving (MCP1662) | 6-pin SOT-23, 8-pin (3 × 3) TDFN |
| MIC2141 | 2.2 to 14 | Up to 22 | –40 to +85 | 330 | 1000 | Micropower bost converter with control signal input to proportionally adjust output voltage | 5-pin SOT-23 |
| MIC2619 | 2.8 to 6.5 | Up to 35 | –40 to +125 | 1200 | 350 | 1.2 MHz PWM boost converter with OVP | 6-pin Thin SOT-23 |
| MIC2290 | 2.5 to 10 | Up to 34 | –40 to +125 | 1200 | 750 | 2 mm × 2 mm PWM boost regulator with internal Schottky diode | 2 × 2 MLF |
| MIC2605/06 | 4.5 to 20 | Up to 40 | –40 to +125 | 1200/2000 | 500 | 0.5A, 1.2 MHz/2 MHz wide input range boost with integrated switch and Schottky diode | 2 × 2 MLF |
| MIC2145 | 2.4 to 16 | Up to 16 | –40 to +85 | 450 | 900 | High-efficiency 2.5W boost converter | 8-pin MSOP, 3 × 3 MLF |
| MIC2570/1 | 1.3 to 15 | Up to 36 | –40 to +85 | 20 | 1100 | Two-cell/single-cell switching regulator | 8-pin SOIC, 8-pin MSOP |
| MIC2288 | 2.5 to 10 | Up to 34 | –40 to +125 | 1200 | 1200 | 1A 1.2 MHz PWM boost converter in Thin SOT-23 and 2 mm × 2 mm MLF | 5-pin SOT-23, 2 × 2 MLF |
| MIC3172 | 3 to 40 | Up to 65 | –40 to +85 | 100 | 1250 | 100 kHz 1.25A switching regulators with enable pin | 8-pin SOIC, 8-pin DIP |
| MIC2295/96 | 2.5 to 10 | Up to 34 | –40 to +125 | 1200/600 | 1200 | High power density 1.2A boost regulator | 5-pin SOT-23, 2 × 2 MLF |
| MIC2601/02 | 4.5 to 20 | Up to 40 | –40 to +125 | 1200/2000 | 1200 | 1.2A, 1.2 MHz/2 MHz wide input range integrated switch boost regulator | 2 × 2 MLF |
| MIC2250/51 | 2.5 to 5.5 | Up to 32/27 | –40 to +125 | Variable | 900 | High-efficiency low EMI boost regulator with frequency dithering | 5-pin SOT-23, 2 × 2 MLF |
| MIC2172 | 3 to 40 | Up to 65 | –40 to +85 | 100 | 1250 | 100 kHz 1.25A switching regulator with frequency sync | 8-pin DIP, 8-pin SOIC |
| MIC2253 | 2.5 to 10 | Up to 30 | –40 to +125 | 1000 | 3500 | 3.5A 1 MHz high-efficiency boost regulator with OVP and softstart | 3 × 3 MLF |
| MIC2171 | 3 to 40 | Up to 65 | –40 to +85 | 100 | 2500 | 100 kHz 2.5A switching regulator | TO220, TO263 |
| MIC2875/76 | 2.5 to 6 | Up to 6 | –40 to +125 | 2000 | 4800 | 4.8A ISW, synchronous boost regulator with bi-directional load disconnect | 2 × 2 Thin MLF |
| MIC2877 | 2.5 to 5.5 | $V_{IN}$ to 5.5V | –40 to +125 | 2000 | 6500 | 6.5A ISW, synchronous boost regulator with bidirectional load disconnect | 2 × 2 FTQFN |

## POWER MANAGEMENT: Multiple Output Switching Regulators

| Part # | Description | Input Voltage Range (V) | Number of Outputs | Output Voltage (V) | Operating Temperature Range (°C) | Control Scheme | Switching Frequency (kHz) | Output Current (mA) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MIC4742 | 2 MHz Dual 2A Integrated Switch Buck Regulator | 2.9 to 5.5 | 2 | DC/DC: 0.6 to 5.5 | –40 to +125 | PWM Mode | 2000 | DC to DC: 2,000/2,000 mA | | 16-pin 3 × 3 MLF, SSOP |
| MIC4744 | 4 MHz Dual 2A Integrated Switch Buck Regulator | 2.9 to 5.5 | 2 | DC/DC: 0.6 to 5.5 | –40 to +125 | PWM Mode | 4000 | DC to DC: 2,000/2,000 mA | | 16-pin 3 × 3 MLF, SSOP |
| MIC4782 | 1.8M Hz Dual 2A Integrated Switch | 3 to 6 | 2 | DC/DC: 0.6 to 6 | –40 to +125 | PWM Mode | 1800 | DC to DC: 2,000/2,000 mA | | 3 × 3 MLF |
| MIC2238 | 2.5 MHz Dual Phase PWM Buck Regulator | 2.5 to 5.5 | 2 | DC/DC: 0.8 to 3.3 | –40 to +125 | PWM Mode | 2500 | DC to DC: 800/800 mA | Automatic switching into light load mode of operation | 3 × 3 MLF |
| MIC23250 | 4 MHz Dual Synchronous Buck Regulator | 2.7 to 5.5 | 2 | DC/DC: 0.8 to 3.3 | –40 to +125 | PWM Mode | 4000 | DC to DC: 400/400 mA | With HyperLight Load®mode | 2 × 2 MLF, 2.5 × 2.5 MLF |
| MIC23254 | 4 MHz Dual 400 mA Synchronous Buck Regulator | 2.5 to 5.5 | 2 | 1.0/1.8 | –40 to +125 | PWM Mode | 4000 | DC to DC: 400/400 mA | With Low Input Voltage and HyperLight Load mode | 2 × 2 MLF |
| MIC23450 | 3 MHz, PWM, 2A Triple Buck Regulator | 2.7 to 5.5 | 3 | DC/DC: 1.0 to 3.3 | –40 to +125 | PWM Mode | 3000 | DC to DC: 2,000/2,000/2,000 mA | With HyperLight Load mode and Power Good | 5 × 5 QFN |
| MIC24420 | 2.5A Dual Output PWM Synchronous Buck Regulator | 4.5 to 15 | 2 | DC/DC: 0.7 to 10.5 | –40 to +125 | PWM Mode | 1000 | DC to DC: 2,500/2,500 mA | Power Good and Soft Start, 180° out of phase operation | 4 × 4 QFN |
| MIC24421 | 2.5A Dual Output PWM Synchronous Buck Regulator | 4.5 to 15 | 2 | DC/DC: 0.7 to 10.5 | –40 to +125 | PWM Mode | 500 | DC to DC: 2,500/2,500 mA | Power Good and Soft Start, 180° out of phase operation | 4 × 4 QFN |
| MIC25400 | 2A Dual Output PWM Synchronous Buck Regulator | 4.5 to 13.2 | 2 | DC/DC: 0.7 to 9.4 | –40 to +125 | PWM Mode | 1000 | DC to DC: 2,000/2,000 mA | 180° out of phase operation | 4 × 4 QFN |
| MIC23158 | 3 MHz PWM Dual 2A Buck Regulator with Output Auto Discharge + B15 | 2.7 to 5.5 | 2 | DC/DC: 1 to 3.3 | –40 to +125 | PWM Mode | 3000 | DC to DC: 2,000/2,000 mA | HyperLight Load mode, Power Good and Output Auto-Discharge | 3 × 4 MLF |
| MIC23159 | 3 MHz PWM Dual 2A Buck Regulator | 2.7 to 5.5 | 2 | DC/DC: 1 to 3.3 | –40 to +125 | PWM Mode | 3000 | DC to DC: 2,000/2,000 mA | HyperLight Load mode and Power Good | 3 × 4 MLF |
| MIC23451 | 3 MHz, 2A Triple Synchronous Buck Regulator | 2.7 to 5.5 | 3 | DC/DC: 1 to 3.3 | –40 to +125 | PWM Mode | 3000 | DC to DC: 2,000/2,000/2,000 mA | HyperLight Load mode and Power Good | 4 × 4 QFN |
| MIC2230 | Dual Synchronous Step-Down DC/DC Regulator | 2.5 to 5.5 | 2 | DC/DC: 0.8 to 3.3 | –40 to +125 | PWM Mode | 2500 | DC to DC: 800/800 mA | Power Good and Soft Start | 3 × 3 MLF |
| MIC23060 | 4 MHz DC/DC Regulator and LDO Regulator | 2.7 to 5.5 | 2 | DC/DC Boost: 1.8 to 3.3<br>DC/DC Buck: 1 to Boost VOUT | –40 to +125 | PWM Mode | 4000 | DC to DC Buck: 600 mA, LDO: 300 mA | Flexible sequencing feature | 2.5 × 2.5 MLF |
| MIC2225 | 2 MHz DC/DC Converter with LDO | 2.7 to 5.5 | 2 | DC/DC: 1.0 to 4.5<br>LDO: 0.8 to 3.3 | –40 to +125 | PWM Mode | 2000 | DC to DC Buck: 600 mA, LDO: 300 mA | Independent enable, >95% efficiency | 2 × 2 MLF |
| MIC23099 | Step-Up/Step-Down Regulators with Battery Monitoring | 0.85 to 1.6 | 2 | DC/DC: 1.7 to 2.5<br>LDO: 0.8 to 2.5 | –40 to +125 | PWM Mode | 100 Boost, 1000 Buck | DC to DC Buck: 30mA, DC/DC Boost 200 mA | AA/AAA Battery Monitoring | 2.5 × 2.5 QFN |
| MIC2800 | 2 MHz DC/DC Converter with Two Linear Regulators. POR/Power Good pin and LOWQ Mode | 2.7 to 5.5 | 3 | DC/DC: 1.8 to 3.3<br>LDOs: 0.8 to 3.6 | –40 to +125 | PWM Mode | 2000 | DC to DC Buck: 600 mA, LDO: 300/300 mA | POR/Power Good pin and LOWQ mode | 3 × 3 MLF |
| MIC2810 | 2 MHz DC/DC Regulator with Two Linear Regulators. LDO1 has a separate VIN pin and can either post-regulate the DC/DC converter or be connect directly to the main input supply. POR/Power Good Pin. | 2.7 to 5.5 | 3 | DC/DC: 1.8 to 3.3<br>LDOs: 0.8 to 3.6 | –40 to +125 | PWM Mode | 2000 | DC to DC Buck: 600 mA, LDO: 300/300 mA | LDO1 has a separate VIN pin and can either post-regulate the DC/DC converter | 3 × 3 MLF |
| MIC2811 | 2 MHz 600 mA DC/DC Regulators with Triple 300 mA LDOs | 2.7 to 5.5 | 4 | LDO1/2 : 0.8 to 3.6<br>LDO3 : 1.0 to 3.9 | –40 to +125 | PWM Mode | 2000 | DC to DC Buck: 600 mA, LDO: 300/300/300 mA | LDO1 and LDO2 have separate Vin | 3 × 3 MLF |
| MIC2821 | 2 MHz 600 mA DC/DC Regulators with Triple 300 mA LDOs | 2.7 to 5.5 | 4 | LDO1/2 : 0.8 to 3.6<br>LDO3 : 1.0 to 3.9 | –40 to +125 | PWM Mode | 2000 | DC to DC Buck: 600 mA, LDO: 300/300/300 mA | Independent enable for all four regulators. | 3 × 3 MLF |
| MIC2826 | Quad Output PMIC with HyperLight Load Mode DC/DC, Three LDOs and I²C Control | 2.7 to 5.5 | 4 | DC/DC : 0.8 to 1.8<br>LDOs : 0.8 to 3.3 | –40 to +125 | PWM Mode | 4000 | DC to DC Buck: 500 mA, LDO: 150/150/150 mA | I²C Control and Dynamic Voltage Scaling 3 LDOs | 2.5 × 2.5 MLF |
| MIC2827 | Triple Output PMIC with HyperLight Load Mode DC-DC, Two LDOs and I²C Control | 2.7 to 5.5 | 3 | DC/DC : 0.8 to 1.8<br>LDOs : 0.8 to 3.3 | –40 to +125 | PWM Mode | 4000 | DC to DC Buck: 500 mA, LDO: 150/150 mA | I²C Control and Dynamic Voltage Scaling 3 LDOs | 2.5 × 2.5 MLF |

## POWER MANAGEMENT: Multiple Output Switching Regulators (Continued)

| Part # | Description | Input Voltage Range (V) | Number of Outputs | Output Voltage (V) | Operating Temperature Range (°C) | Control Scheme | Switching Frequency (kHz) | Output Current (mA) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MIC7400 | Configurable Five-Channel Buck Regulator Plus One-Boost | 2.4 to 5.5 | 6 | Bucks: 0.8 to 3.3 (Configurable) Boost: 7.0 to 14.0 (Configurable) | –40 to +125 | PWM Mode | 2000 Boost, 1300 Bucks | DC to DC Bucks: 3,000 mA, DC/DC Boost 200 mA | Highly integrated configurable, featuring five buck regulators, one boost regulator and global power good indicator | 4.5 × 4.5 QFN |
| MIC7401 | Configurable Five-Channel Buck Regulator Plus One-Boost with HyperLight Load mode, I²C Control, and Enable | 2.4 to 5.5 | 6 | Bucks : 0.8 to 3.3 (Configurable) Boost : 7.0 to 14.0 (Configurable) | –40 to +125 | PWM Mode | 2000 Boost, 1300 Bucks | DC to DC Bucks: 3,000 mA, DC/DC Boost 200 mA | Highly integrated configurable, featuring five buck regulators, one boost regulator, global power good indicator and enable pin | 4.5 × 4.5 QFN |

## POWER MANAGEMENT: Combination Switching Regulators

| Part # | Description | Input Voltage Range (V) | Output Voltage (V) | Operating Temp. Range (°C) | Control Scheme | Switching Frequency (kHz) | Typical Active Current (mA) | Output Current (mA) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| TC1303 | Synchronous Buck Regulator, LDO with Power Good | 2.7 to 5.5 | DC/DC: 0.8 to 4.5 LDO: 1.5 to 3.3 | –40 to +85 | PFM/PWM | 2000 | 65/600 | DC/DC: 500 mA LDO: 300 mA | PFM/PWM auto-switching, Power good output | 10-pin MSOP, 10-pin 3 × 3 DFN |
| TC1304 | Synchronous Buck Regulator, LDO | 2.7 to 5.5 | DC/DC: 0.8 to 4.5 LDO: 1.5 to 3.3 | –40 to +85 | PFM/PWM | 2000 | 65/600 | DC/DC: 500 mA LDO: 300 mA | PFM/PWM auto-switching, Power sequencing | 10-pin MSOP, 10-pin 3 × 3 DFN |
| TC1313 | Synchronous Buck Regulator, LDO | 2.7 to 5.5 | DC/DC: 0.8 to 4.5 LDO: 1.5 to 3.3 | –40 to +85 | PFM/PWM | 2000 | 65/600 | DC/DC: 500 mA LDO: 300 mA | PFM/PWM auto-switching | 10-pin MSOP, 10-pin 3 × 3 DFN |

## POWER MANAGEMENT: Inductorless Offline Switching Regulators

| Part # | $V_{IN}$ ($V_{AC}$) | Adjustable $V_{OUT}$ (V) | Fixed $V_{OUT}$ (V) | $I_{OUT}$ Max. (mA) | Load Regulation (%/mA) | Packages |
|---|---|---|---|---|---|---|
| SR086 | 80–285 | 9.0–50 | 3.3 | 100 | 0.025 | 8-Lead SOIC with Heat Slug |
| SR087 | 80–285 | 9.0–50 | 5 | 100 | 0.017 | 8-Lead SOIC with Heat Slug |
| SR10 | 80–285 | 6.0–28 | 6.0, 12, 24 | 60 | – | 8-Lead SOIC |

## POWER MANAGEMENT: PWM Controllers

| Part # | Supported Topologies | Supported Outputs | Input Voltage Range (V) | Output Voltage (V) | Operating Frequency (Hz) | Operating Temp. Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|
| MIC2101 | Sync. Buck | 1 | 4.5 to 38 | 0.8 to 24 | 200k to 600k | –40 to +125 | HyperLight Load®mode, External Clock Sync, Power Good, Soft Start, Internal Compensation and Voltage Bias | 16-pin 3 × 3 MLF® |
| MIC2102 | Sync. Buck | 1 | 4.5 to 38 | 0.8 to 24 | 200k to 600k | –40 to +125 | Power Good, Soft Start, Internal Compensation and Voltage Bias | 16-pin 3 × 3 MLF |
| MIC2103 | Sync. Buck | 1 | 4.5 to 75 | 0.8 to 24 | 200k to 600k | –40 to +125 | HyperLight Load mode, External Clock sync, Power Good, Soft Start, Internal Compensation and Voltage Bias | 16-pin 3 × 3 MLF |
| MIC2104 | Sync. Buck | 1 | 4.5 to 75 | 0.8 to 24 | 200k to 600k | –40 to +125 | Power Good, Soft Start, Internal Compensation and Voltage Bias | 16-pin 3 × 3 MLF |
| MIC2111B | Sync. Buck | 1 | 3.3 to 5.5 | 0.6 to 3.64 | 200k to 2M | –40 to +125 | Power Good, Soft Start, Internal Voltage Bias, Enable Pin, Current Limit/Short Circuit Protection | 3 × 3 QFN |
| MIC2124 | Sync. Buck | 1 | 3.0 to 18 | 0.8 to 12 | 300k | –40 to +125 | Soft Start, Internal Voltage Bias | 10-pin MSOP |
| MIC2130 | Sync. Buck | 1 | 8.0 to 40 | 0.7 to 24 | 150k or 400k | –40 to +125 | Power Good, Soft Start, Internal Voltage Bias | 16-pin e-TSSOP, 16-pin 4 × 4 MLF |
| MIC2131 | Sync. Buck | 1 | 8.0 to 40 | 0.7 to 24 | 150k or 400k | –40 to +125 | Power Good, Soft Start, Internal Voltage Bias | 16-pin e-TSSOP, 16-pin 4 × 4 MLF |
| MIC2150 | Sync. Buck | 2 | 4.5 to 14.5 | 0.7 to 5.5 | 500k | –40 to +125 | Power Good, Soft Start, Internal Voltage Bias | 24-pin 4 × 4 MLF |
| MIC2151 | Sync. Buck | 2 | 4.5 to 14.5 | 0.7 to 5.5 | 300k | –40 to +125 | Power Good, Soft Start, Internal Voltage Bias | 24-pin 4 × 4 MLF |
| MIC2155 | Sync. Buck | 1 | 4.5 to 14.5 | 0.7 to 3.6 | 500k | –40 to +125 | External Clock Sync, Power Good, Soft Start | 32-pin 5 × 5 MLF |
| MIC2164 | Sync. Buck | 1 | 3.0 to 28 | 0.8 to 5.5 | 300k, 600k, 1M | –40 to +125 | Soft Start, Internal Compensation and Voltage Bias | 10-pin MSOP |
| MIC2164C | Sync. Buck | 1 | 3.0 to 28 | 0.8 to 5.5 | 270k | –40 to +125 | Soft Start, Internal Compensation and Voltage Bias | 10-pin MSOP |
| MIC2165 | Sync. Buck | 1 | 4.5 to 28 | 0.8 to 5.5 | 600k | –40 to +125 | Hyper Speed Control® architecture, Power Good, Soft Start, Internal Voltage Bias | 10-pin MSOP |
| MIC2166 | Sync. Buck | 1 | 4.5 to 28 | 0.8 to 5.5 | 600k | –40 to +125 | Power Good, Soft Start, Internal Compensation and Voltage Bias | 10-pin MSOP |
| MIC2168 | Sync. Buck | 1 | 3.0 to 14.5 | 0.8 to 5.5 | 1.0M | –40 to +125 | Soft Start, Internal Compensation and Voltage Bias | 10-pin MSOP |
| MIC2169 | Sync. Buck | 1 | 3.0 to 14.5 | 0.8 to 5.5 | 500k | –40 to +125 | Soft Start, Internal Voltage Bias | 10-pin MSOP |
| MIC2169A | Sync. Buck | 1 | 3.0 to 14.5 | 0.8 to 5.5 | 500k | –40 to +125 | Soft Start, Internal Voltage Bias | 10-pin MSOP |

## POWER MANAGEMENT: PWM Controllers (Continued)

| Part # | Supported Topologies | Supported Outputs | Input Voltage Range (V) | Output Voltage (V) | Operating Frequency (Hz) | Operating Temp. Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|
| MIC2169B | Sync. Buck | 1 | 3.0 to 14.5 | 0.8 to 5.5 | 500k | –40 to +125 | Soft Start, Internal Voltage Bias | 10-pin MSOP |
| MIC2176 | Sync. Buck | 1 | 4.5 to 75 | 0.8 to 24 | 100k, 200k, or 300k | –40 to +125 | Soft Start, Internal Compensation and Voltage Bias | 10-pin MSOP |
| MIC2182 | Sync. Buck | 1 | 4.5 to 32 | 1.25 to 6.0 | 300k | –40 to +85 | Skip Mode, External Clock Sync, Soft Start, Internal Voltage Bias | 16-pin SOP. 16-pin SSOP |
| MIC2183 | Sync. Buck | 1 | 2.9 to 14 | 1.3 to 12 | 200k/400k | –40 to +125 | External Clock Sync, Soft Start, Internal Voltage Bias | 16-pin SOP. 16-pin QSOP |
| MIC2125 | Sync. Buck | 1 | 4.5 to 28 | 0.6 to 24 | 200k to 750k | –40 to +125 | HyperLight Load mode, Power Good, Soft Start (7 ms), Internal Voltage Bias, Enable Pin, Current Limit/Short Circuit Protection | 16-pin 3 × 3 MLF |
| MIC2126 | Sync. Buck | 1 | 4.5 to 28 | 0.6 to 24 | 200k to 750k | –40 to +125 | Power Good, Soft Start (7 ms), Internal Voltage Bias, Enable Pin, Current Limit/Short Circuit Protection | 16-pin 3 × 3 MLF |
| MIC2128 | Sync. Buck | 1 | 4.5 to 75 | 0.6 to 30 | 200k to 800k | –40 to +125 | Programmable soft-start/frequency/current-limit, Internal compensation and voltage bias | 16-pin 3 × 3 MLF |
| MIC2127A | Sync. Buck | 1 | 4.5 to 75 | 0.6 to 30 | 200k to 800k | –40 to +125 | Light load operation, Programmable frequency,Current Limit, Switch over LDO | 16-pin 3 × 3 MLF |
| MIC2184 | Async. Buck | 1 | 2.9 to 14 | 1.3 to 12 | 200k/400k | –40 to +125 | External Clock Sync, Soft Start, Internal Voltage Bias | 16-pin SOP. 16-pin QSOP |
| MIC2185 | Boost, SEPIC, Ćuk | 1 | 2.9 to 14 | 3.3 to 5.5 | 200k/400k | –40 to +85 | Skip Mode, External Clock Sync, Soft Start, Internal Voltage Bias | 16-pin SOIC, 16-pin QSOP |
| MIC2186 | Boost, SEPIC, Flyback | 1 | 2.9 to 14 | 3.3 to 5.5 | 100/200/400k | –40 to +85 | Skip Mode, External Clock Sync, Soft Start, Internal Voltage Bias | 16-pin SOP. 16-pin QSOP |
| MIC2193 | Sync. Buck | 1 | 2.9 to 14 | 3.3 to 5.5 | 400k | –40 to +125 | Internal Voltage Bias, UVLO | 8-pin SOIC |
| MIC2194 | Async. Buck | 1 | 2.9 to 14 | 3.3 to 5.5 | 400k | –40 to +125 | Internal voltage Bias, UVLO, Current Limit/Short Circuit Protection | 8-pin SOIC |
| MIC2196 | Boost, SEPIC | 1 | 2.9 to 14 | 3.3 to 5.5 | 400k | –40 to +125 | Internal voltage Bias, UVLO, Current Limit/Short Circuit Protection | 8-pin SOIC |
| MIC2198 | Sync. Buck | 1 | 4.5 to 32 | 0.8 to 6.0 | 500k | –40 to +125 | Internal voltage Bias, UVLO, Current Limit/Short Circuit Protection | 12-pin 4 × 4 MLF |
| MIC2199 | Buck | 1 | 4.5 to 32 | 0.8 to 6.0 | 300k | –40 to +125 | Internal voltage Bias, UVLO, Current Limit/Short Circuit Protection | 12-pin 4 × 4 MLF |
| MIC3808 | Push-Pull, Half Bridge, Full Bridge | 1 | 8.3 to 15 | – | Adj. to 1M | –40 to +85 | Soft Start, Internal Voltage Bias, UVLO, Current Limit/Short Circuit Protection | 8-pin SOP, 8-pin MSOP |
| MIC3809 | Push-Pull, Half Bridge, Full Bridge | 1 | 4.1 to 15 | – | Adj. to 1M | –40 to +85 | Soft Start, Internal Voltage Bias, UVLO, Current Limit/Short Circuit Protection | 8-pin SOP, 8-pin MSOP |
| MIC3838 | Push-Pull, Half Bridge, Full Bridge | 1 | 8.3 to 15 | – | Adj. to 1M | –40 to +85 | Soft Start, Internal Voltage Bias, UVLO, Current Limit/Short Circuit Protection | 10-pin MSOP |
| MIC3839 | Push-Pull, Half Bridge, Full Bridge | 1 | 4.1 to 15 | – | Adj. to 1M | –40 to +85 | Soft Start, Internal Voltage Bias, UVLO, Current Limit/Short Circuit Protection | 10-pin MSOP |
| MIC38C42 | Forward, Flyback | 1 | 15.5 to 20 | – | Adj. to 500k | –40 to +85 | Forward,Flyback Supported Topologies | 8-pin PDIP, 14-pin PDIP, 8-pin MSOP, 8-pin SOIC, 14-pin SOIC |
| MIC38C43 | Forward, Flyback | 1 | 9.0 to 20 | – | Adj. to 500k | –40 to +85 | Forward,Flyback Supported Topologies | 8-pin PDIP, 14-pin PDIP, 8-pin MSOP, 8-pin SOIC, 14-pin SOIC |
| MIC38C44 | Forward, Flyback | 1 | 15.5 to 20 | – | Adj. to 500k | –40 to +85 | Forward,Flyback Supported Topologies | 8-pin PDIP, 14-pin PDIP, 8-pin MSOP, 8-pin SOIC, 14-pin SOIC |
| MIC38C45 | Forward, Flyback | 1 | 9.0 to 20 | – | Adj. to 500k | –40 to +85 | Forward,Flyback Supported Topologies | 8-pin PDIP, 14-pin PDIP, 8-pin MSOP, 8-pin SOIC, 14-pin SOIC |
| MIC38HC42 | Forward, Flyback | 1 | 15.5 to 20 | – | Adj. to 500k | –40 to +85 | Forward,Flyback Supported Topologies | 8-pin PDIP, 14-pin PDIP, 8-pin SOIC, 14-pin SOIC |
| MIC38HC44 | Forward, Flyback | 1 | 15.5 to 20 | – | Adj. to 500k | –40 to +85 | Forward,Flyback Supported Topologies | 8-pin PDIP, 14-pin PDIP, 8-pin SOIC, 14-pin SOIC |
| MIC38HC45 | Forward, Flyback | 1 | 9.0 to 20 | – | Adj. to 500k | –40 to +85 | Forward,Flyback Supported Topologies | 8-pin PDIP, 14-pin PDIP, 8-pin SOIC, 14-pin SOIC |
| MIC9130 | Forward, Flyback | 1 | 9.0 to 180 | – | Adj. to 1.5M | –40 to +125 | Forward,Flyback Supported Topologies, External Clock Sync | 16-pin SOIC, 16-pin QSOP |
| MIC9131 | Forward, Flyback | 1 | 9.0 to 180 | – | Adj. to 1M | –40 to +125 | Forward,Flyback Supported Topologies, External Clock Sync | 16-pin SOIC, 16-pin QSOP |
| MCP1630 | Flyback, Boost, SEPIC, Ćuk | 1 | 3.0 to 5.5 | – | Sync. to 1M | –40 to +125 | External Clock Sync, Current Limit/Short Circuit Protection | 8-pin 2x3 DFN, 8-pin MSOP |
| MCP1630V | Flyback, Boost, SEPIC, Ćuk | 1 | 3.0 to 5.5 | – | Sync. to 1M | –40 to +125 | External Clock Sync, Current Limit/Short Circuit Protection | 8-pin 2x3 DFN, 8-pin MSOP |
| MCP1631 | Flyback, Boost, SEPIC, Ćuk | 1 | 3.0 to 5.5 | – | Sync. to 2M | –40 to +125 | External Clock Sync, Current Limit/Short Circuit Protection | 20-pin TSSOP, 20-pin SSOP, 20 pin 4 × 4 QFN |
| MCP1631V | Flyback, Boost, SEPIC, Ćuk | 1 | 3.0 to 5.5 | – | Sync. to 2M | –40 to +125 | External Clock Sync, Current Limit/Short Circuit Protection | 20-pin TSSOP, 20-SSOP, 20-pin 4 × 4 QFN |
| MCP1631HV | Flyback, Boost, SEPIC, Ćuk | 1 | 3.5 to 16 | – | Sync. to 2M | –40 to +125 | External Clock Sync, Current Limit/Short Circuit Protection | 20-pin TSSOP, 20-SSOP |
| MCP1631VHV | Flyback, Boost, SEPIC, Ćuk | 1 | 3.5 to 16 | – | Sync. to 2M | –40 to +125 | External Clock Sync, Current Limit/Short Circuit Protection | 20-pin TSSOP, 20-SSOP |
| MCP1632 | Flyback, Boost, SEPIC, Ćuk | 1 | 3.0 to 6 | – | 300k/600k | –40 to +125 | Soft Start, Internal Voltage Bias, UVLO, Current Limit/Short Circuit Protection | 8-pin MSOP, 8-pin 2 × 3 DFN |
| MCP19035 | Sync. Buck | 1 | 4.5 to 30 | – | 300k/600k | –40 to +125 | Power Good, Soft Start, Internal Voltage Bias, UVLO, Current Limit/Short Circuit Protection | 10-pin 3 × 3 DFN |

## POWER MANAGEMENT: Hybrid PWM Controllers – Digitally Enhanced Power Analog

| Part # | Input Voltage Range (V) | Output Voltage (V) | Topologies Supported | Channels | Program Memory Size (kWords) | RAM (bytes) | GPIO | Product features integrated MCU, LDO, MOSFET drivers, 10-bit ADC, temp sensor, user-configurable operation and: | Packages |
|---|---|---|---|---|---|---|---|---|---|
| MCP19110 | 4.5 to 32 | 0.5 to 90% * $V_{IN}$ | Sync. Buck | 1 | 4 | 256 | 11 | Configurable and dynamically changeable internal analog compensation network | 24-pin 4 × 4 QFN |
| MCP19111 | 4.5 to 32 | 0.5 to 90% * $V_{IN}$ | Sync. Buck | 1 | 4 | 256 | 14 | Configurable and dynamically changeable internal analog compensation network and a debug interface | 28-pin 5 × 5 QFN |
| MCP19114 | 4.5 to 42 | Dependent on topology | Boost, Flyback, SEPIC, Ćuk | 1 | 4 | 256 | 8 | Excellent regulation for constant current applications | 24-pin 4 × 4 QFN |
| MCP19115 | 4.5 to 42 | Dependent on topology | Boost, Flyback, SEPIC, Ćuk | 1 | 4 | 256 | 12 | Excellent regulation for constant current applications and a debug interface | 28-pin 5 × 5 QFN |
| MCP19116 | 4.5 to 42 | Dependent on topology | Boost, Flyback, SEPIC, Ćuk | 1 | 8 | 336 | 8 | Improved current regulation accuracy, additional code space (compared to MCP19114 or MCP19115) | 24-pin 4 × 4 QFN |
| MCP19117 | 4.5 to 42 | Dependent on topology | Boost, Flyback, SEPIC, Ćuk | 1 | 8 | 336 | 12 | Improved current regulation accuracy, additional code space (compared to MCP19114 or MCP19115) and a debug interface | 28-pin 5 × 5 QFN |
| MCP19118 | 4.5 to 40 | 0.5 to 90% * $V_{IN}$ | Sync. Buck | 1 | 4 | 256 | 11 | Configurable and dynamically changeable internal analog compensation network | 24-pin 4 × 4 QFN |
| MCP19119 | 4.5 to 40 | 0.5 to 90% * $V_{IN}$ | Sync. Buck | 1 | 4 | 256 | 14 | Configurable and dynamically changeable internal analog compensation network and a debug interface | 28-pin 5 × 5 QFN |
| MCP19122 | 4.5 to 40 | 0.3 to 16 | Sync. Buck | 1 | 4 | 256 | 12 | Emulated average current mode control, programmable gain feedback amplifier, multiphase operation, improved regulation accuracy and current measurement accuracy (Compared to MCP19110/1/8/9) | 24-pin 4 × 4 QFN |
| MCP19123 | 4.5 to 40 | 0.3 to 16 | Sync. Buck | 1 | 4 | 256 | 16 | Emulated average current mode control, programmable gain feedback amplifier, multiphase operation, improved regulation accuracy and current measurement accuracy (Compared to MCP19110/1/8/9) and a debug interface | 28-pin 5 × 5 QFN |
| MCP19124 | 4.5 to 42 | Dependent on topology | Boost, Flyback, SEPIC, Ćuk | 1 | 4 | 256 | 8 | Dual independent voltage and current control loops allow seamless transitions from constant voltage to constant current regulation | 24-pin 4 × 4 QFN |
| MCP19125 | 4.5 to 42 | Dependent on topology | Boost, Flyback, SEPIC, Ćuk | 1 | 4 | 256 | 12 | Dual independent voltage and current control loops allow seamless transitions from constant voltage to constant current regulation and a debug interface | 28-pin 5 × 5 QFN |
| MCP19214 | 4.5 to 42 | Dependent on topology | Boost, Flyback, SEPIC, Ćuk | 2 | 8 | 336 | 8 | Dual channels, which can be configured to control two outputs, or one bi-directional system | 28-pin 5 × 5 QFN |
| MCP19215 | 4.5 to 42 | Dependent on topology | Boost, Flyback, SEPIC, Ćuk | 2 | 8 | 336 | 12 | Dual channels, which can be configured to control two outputs, or one bi-directional system and a debug interface | 32-pin 5 × 5 QFN |

## POWER MANAGEMENT: Power Modules

| Part # | Input Voltage Range (V) | Output Voltage (V) | Operating Temp. Range (°C) | Control Scheme | Switching Frequency (kHz) | $V_{OUT}$ Max. (V) | Output Current (A) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|
| MIC28304-1 | 4.5 to 70 | Adj. | –40 to +125 | COT | 600 | 24 | 3 | HyperLight Load® Mode, Power Good, Soft Start | 64-pin 12 × 12 QFN |
| MIC28304-2 | 4.5 to 70 | Adj. | –40 to +125 | COT | 600 | 24 | 3 | Hyper Speed Control® Architecture, Power Good, Soft Start | 64-pin 12 × 12 QFN |
| MIC45205-1 | 4.5 to 26 | Adj. | –40 to +125 | COT | 200–600 | 5.5 | 6 | HyperLight Load Mode, Power Good, Soft Start | 52-pin 8 × 8 QFN |
| MIC45205-2 | 4.5 to 26 | Adj. | –40 to +125 | COT | 200–600 | 5.5 | 6 | Hyper Speed Control Architecture, Power Good, Soft Start | 52-pin 8 × 8 QFN |
| MIC45208-1 | 4.5 to 26 | Adj. | –40 to +125 | COT | 200–600 | 5.5 | 10 | HyperLight Load Mode, Power Good, Soft Start | 52-pin 10 × 10 QFN |
| MIC45208-2 | 4.5 to 26 | Adj. | –40 to +125 | COT | 200–600 | 5.5 | 10 | Hyper Speed Control Architecture, Power Good, Soft Start | 52-pin 10 × 10 QFN |
| MIC45212-1 | 4.5 to 26 | Adj. | –40 to +125 | COT | 200–600 | 5.5 | 14 | HyperLight Load Mode, Power Good, Soft Start | 64-pin 12 × 12 QFN |
| MIC45212-2 | 4.5 to 26 | Adj. | –40 to +125 | COT | 200–600 | 5.5 | 14 | Hyper Speed Control Architecture, Power Good, Soft Start | 64-pin 12 × 12 QFN |
| MIC33030 | 2.7 to 5.5 | 1.2, 1.8, Adj. | –40 to +125 | PWM | 8,000 | 3.6 | 0.4 | HyperLight Load Mode | 10-pin 2.5 × 2.0 MLF® |
| MIC33050 | 2.7 to 5.5 | 1.0, 1.2, 1.8, 3.3, Adj. | –40 to +125 | PWM | 4,000 | 3.3 | 0.6 | HyperLight Load Mode | 12-pin 3 × 3 MLF |
| MIC33153 | 2.7 to 5.5 | 1.2, Adj. | –40 to +125 | PWM | 4,000 | 3.6 | 1.2 | HyperLight Load Mode, Power Good, Soft Start | 14-pin 3 × 3.5 MLF |
| MIC3385 | 2.7 to 5.5 | 1.5, Adj. | –40 to +125 | PWM | 8,000 | 5.5 | 0.6 | LowQ | 14-pin 3 × 3.5 MLF |
| MIC28303-1 | 4.5 to 50 | Adj. | –40 to +125 | COT | 600 | 24 | 3 | HyperLight Load Mode, Power Good, Soft Start | 64-pin 12 × 12 QFN |
| MIC28303-2 | 4.5 to 50 | Adj. | –40 to +125 | COT | 600 | 24 | 3 | Hyper Speed Control Architecture, Power Good, Soft Start | 64-pin 12 × 12 QFN |
| MIC45116-1 | 4.5 to 20 | Adj. | –40 to +125 | COT | 600 | 17 | 6 | HyperLight Load Mode, Power Good, Soft Start | 52-pin 8 × 8 QFN |
| MIC45116-2 | 4.5 to 20 | Adj. | –40 to +125 | COT | 600 | 17 | 6 | Hyper Speed Control Architecture, Power Good, Soft Start | 52-pin 8 × 8 QFN |
| MIC45404 | 4.5 to 19 | Selectable | –40 to +125 | Fixed | 400–790 | 3.3 | 5 | Power Good, Soft Start | 64-pin 6 × 10 QFN |

## POWER MANAGEMENT: Charge Pump DC-to-DC Converters

| Part # | Configuration | Input Voltage Range (V) | Output Voltage (V) | Typical Output Current (mA) | Switching Frequency (kHz) | Supply Current (Is, floating output µA, 25°C) | Output Resistance (Ω, at typical output current, 25°C) | Power Conversion Efficiency (%) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| **Inverting or Doubling Charge Pumps** | | | | | | | | | | |
| TC682 | Inverted doubling | 2.4 to 5.5 | –2*VIN | 10 | 12 | 185 | 140 | 92% at 2.5 mA | – | 8-pin SOIC and 8-pin PDIP |
| TC1240A | Doubling | 2.5 to 5 | 2*VIN | 20 | 80 | 550 | 12 | 94% at 5 mA | Shutdown | 6-pin SOT-23 |
| TC7660S | Inverting or doubling | 1.5 to 12 | –VIN or 2* VIN | 20 | 10 or 45 | 80 | 60 | 98% at 1 mA | Boost pin increases switching frequency | 8-pin SOIC and 8-pin PDIP |
| TC7660H | Inverting or doubling | 1.5 to 10 | –VIN or 2* VIN | 20 | 120 | 1000 | 55 | 85% at 10 mA | High-voltage oscillator | 8-pin SOIC and 8-pin PDIP |
| TC7662B | Inverting or doubling | 1.5 to 15 | –VIN or 2* VIN | 20 | 10 or 35 | 80 | 65 | 96% at 1 mA | Boost pin increases switching frequency | 8-pin SOIC and 8-pin PDIP |
| TC7662A | Inverting or doubling | 3 to 18 | –VIN or 2* VIN | 40 | 12 | 190 | 50 | 97% at 7.5 mA | No low-voltage terminal required | 8-pin PDIP |
| TC962 | Inverting or doubling | 3 to 18 | –VIN or 2* VIN | 80 | 12 or 24 | 190 | 35 | 97% at 7.5 mA | Boost pin increases switching frequency | 16-pin SOIC, 8-pin PDIP |
| **Regulated Charge Pumps** | | | | | | | | | | |
| MCP1256 | Regulated | 1.8 to 3.6 | 3.3 | 100 | 650 | 2300 | N/A | 85% at 50 mA | Soft start, shutdown, power good signal and sleep mode | 10-pin MSOP and 10-pin 3 × 3 DFN |
| MCP1257 | Regulated | 1.8 to 3.6 | 3.3 | 100 | 650 | 2300 | N/A | 85% at 50 mA | Soft start, shutdown, low battery warning signal, and sleep mode | 10-pin MSOP and 10-pin 3 × 3 DFN |
| MCP1258 | Regulated | 1.8 to 3.6 | 3.3 | 100 | 650 | 2300 | N/A | 85% at 50 mA | Soft start, shutdown, power good signal and bypass mode | 10-pin MSOP and 10-pin 3 × 3 DFN |
| MCP1259 | Regulated | 1.8 to 3.6 | 3.3 | 100 | 650 | 2300 | N/A | 85% at 50 mA | Soft start, shutdown, low battery warning signal, and bypass mode | 10-pin MSOP and 10-pin 3 × 3 DFN |
| MCP1252 | Regulated | 2.0 to 5.5 | 3.3, 5.0, or adjustable | 150 | 650 | 60 | N/A | 81% at 10 mA | Shutdown, power good, regulated output, adjustable version | 8-pin MSOP |
| MCP1253 | Regulated | 2.0 to 5.5 | 3.3, 5.0, or adjustable | 150 | 1000 | 60 | N/A | 81% at 10 mA | Shutdown, power good, regulated output, adjustable version | 8-pin MSOP |

## POWER MANAGEMENT: CPU/System Supervisors

| Part # | Type | Watchdog Timer | Manual Reset | Power Fail | Operating Temp. Range (°C) | VCC Range (V) | Nominal Reset Voltage (V) | Reset Type | Output | Typical Reset Pulse Width (ms) | Typical Supply Current (µA) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCP100 | Supervisor | – | – | – | –40 to +85 | 1.0–5.5 | 2.7, 3, 3.15, 4.5, 4.6, 4.75, 4.85 | Active Low | Push-Pull | 350 | 45 | 3-pin SOT-23, 3-pin TO-92 |
| MCP101 | Supervisor | – | – | – | –40 to +85 | 1.0–5.5 | 2.7, 3, 3.15, 4.5, 4.6, 4.75, 4.85 | Active High | Push-Pull | 350 | 45 | 3-pin SOT-23, 3-pin TO-92 |
| MCP102 | Supervisor | – | – | – | –40 to +125 | 1.0–5.5 | 1.95 (I-Temp), 2.4, 2.7, 3, 3.15, 4.5, 4.75 | Active Low | Push-Pull | 120 | 1 | 3-pin SC-70, 3-pin SOT-23, 8-pin SOIC 150 mil, 3-pin TO-92 |
| MCP103 | Supervisor | – | – | – | –40 to +125 | 1.0–5.5 | 1.95 (I-Temp), 2.4, 2.7, 3, 3.15, 4.5, 4.75 | Active Low | Push-Pull | 120 | 1 | 3-pin SC-70, 3-pin SOT-23 |
| MCP120 | Supervisor | – | – | – | –40 to +85 | 1.0–5.5 | 2.7, 3, 3.15, 4.5, 4.6, 4.75, 4.85 | Active Low | Open-Drain | 350 | 45 | 3-pin SOT-23, 8-pin SOIC 150 mil, 3-pin TO-92 |
| MCP121 | Supervisor | – | – | – | –40 to +125 | 1.0–5.5 | 1.95 (I-Temp), 2.4, 2.7, 3, 3.15, 4.5, 4.75 | Active Low | Open-Drain | 120 | 1 | 3-pin SC-70, 3-pin SOT-23, 8-pin SOIC 150 mil, 3-pin TO-92 |
| MCP130 | Supervisor | – | – | – | –40 to +85 | 1.0–5.5 | 2.7, 3, 3.15, 4.5, 4.6, 4.75, 4.85 | Active Low | Open-Drain | 350 | 45 | 3-pin SOT-23, 8-pin SOIC 150 mil, 3-pin TO-92 |
| MCP131 | Supervisor | – | – | – | –40 to +125 | 1.0–5.5 | 1.95 (I-Temp), 2.4, 2.7, 3, 3.15, 4.5, 4.75 | Active Low | Open-Drain | 120 | 1 | 3-pin SC-70, 3-pin SOT-23, 8-pin SOIC 150 mil, 3-pin TO-92 |
| MCP1316 | Supervisor | ✓ | ✓ | – | –40 to +125 | 1.0–5.5 | 2.9, 4.6, (2.0-2.4V=I-Temp, 2.4-4.7=Ext) | Active Low | Push-Pull | 200 | 1 | 5-pin SOT-23 |
| MCP1316M | Supervisor | ✓ | ✓ | – | –40 to +125 | 1.0–5.5 | 2.9, 4.6, (2.0-2.4V=I-Temp, 2.4-4.7=Ext) | Active Low | Open-Drain | 200 | 1 | 5-pin SOT-23 |
| MCP1317 | Supervisor | ✓ | ✓ | – | –40 to +125 | 1.0–5.5 | 2.9, 4.6, (2.0-2.4V=I-Temp, 2.4-4.7=Ext) | Active High | Push-Pull | 200 | 1 | 5-pin SOT-23 |
| MCP1318 | Supervisor | ✓ | – | – | –40 to +125 | 1.0–5.5 | 2.9, 4.6, (2.0-2.4V=I-Temp, 2.4-4.7=Ext) | Active Low/High or High/Low | Dual Output Open-Drain and/or Push-Pull | 200 | 1 | 5-pin SOT-23 |

## POWER MANAGEMENT: CPU/System Supervisors (Continued)

| Part # | Type | Watchdog Timer | Manual Reset | Power Fail | Operating Temp. Range (°C) | Vcc Range (V) | Nominal Reset Voltage (V) | Reset Type | Output | Typical Reset Pulse Width (ms) | Typical Supply Current (µA) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCP1318M | Supervisor | ✓ | – | – | –40 to +125 | 1.0–5.5 | 2.9, 4.6, (2.0-2.4V=I-Temp, 2.4-4.7=Ext) | Active Low/High or High/Low | Dual Output Open-Drain and/or Push-Pull | 200 | 1 | 5-pin SOT-23 |
| MCP1319 | Supervisor | – | ✓ | – | –40 to +125 | 1.0–5.5 | 2.9, 4.6, (2.0-2.4V=I-Temp, 2.4-4.7=Ext) | Active Low/High or High/Low | Dual Output Open-Drain and/or Push-Pull | 200 | 1 | 5-pin SOT-23 |
| MCP1319M | Supervisor | – | ✓ | – | –40 to +125 | 1.0–5.5 | 2.9, 4.6, (2.0-2.4V=I-Temp, 2.4-4.7=Ext) | Active Low/High or High/Low | Dual Output Open-Drain and/or Push-Pull | 200 | 1 | 5-pin SOT-23 |
| MCP1320 | Supervisor | ✓ | ✓ | – | –40 to +125 | 1.0–5.5 | 2.9, 4.6, (2.0–2.4V=I-Temp, 2.4–4.7=Ext) | Active Low | Open-Drain | 200 | 1 | 5-pin SOT-23 |
| MCP1321 | Supervisor | ✓ | – | – | –40 to +125 | 1.0–5.5 | 2.9, 4.6, (2.0–2.4V=I-Temp, 2.4–4.7=Ext) | Active Low/High or High/Low | Dual Output Open-Drain and/or Push-Pull | 200 | 1 | 5-pin SOT-23 |
| MCP1322 | Supervisor | – | ✓ | – | –40 to +125 | 1.0–5.5 | 2.9, 4.6, (2.0–2.4V=I-Temp, 2.4–4.7=Ext) | Active Low/High or High/Low | Dual Output Open-Drain and/or Push-Pull | 200 | 1 | 5-pin SOT-23 |
| MCP809 | Supervisor | – | – | – | –40 to +85 | 1.0–5.5 | 2.7, 3.0, 3.15, 4.5, 4.6, 4.75, 4.85 | Active Low | Push-Pull | 350 | 45 | 3-pin SOT-23 |
| MCP810 | Supervisor | – | – | – | –40 to +85 | 1.0–5.5 | 2.7, 3.0, 3.15, 4.5, 4.6, 4.75, 4.85 | Active High | Push-Pull | 350 | 45 | 3-pin SOT-23 |
| TC1232 | Supervisor | ✓ | ✓ | – | –40 to +85 | 4.5–5.5 | 4.5, 4.75 | Active Low/High or High/Low | Dual Output Open-Drain and/or Push-Pull | 610 | 50 | 8-pin PDIP, 16-pin SOIC 300 mil, 8-pin SOIC 150 mil |
| TC1270A | Supervisor | – | ✓ | – | –40 to +125 | 1.0–5.5 | 2.7, 3, 3.15, 4.5, 4.75 | Active Low | Push-Pull | 280 | 7 | 4-pin SOT-143, 5-pin SOT-23 |
| TC1270AN | Supervisor | – | ✓ | – | –40 to +125 | 1.0–5.5 | 2.7, 3, 3.15, 4.5, 4.75 | Active Low | Open-Drain | 280 | 7 | 4-pin SOT-143, 5-pin SOT-23 |
| TC1271A | Supervisor | – | ✓ | – | –40 to +125 | 1.0–5.5 | 2.7, 3, 3.15, 4.5, 4.75 | Active High | Push-Pull | 280 | 7 | 4-pin SOT-143, 5-pin SOT-23 |
| TC1272A | Supervisor | – | – | – | –40 to +125 | 1.0–5.5 | 4.50, 4.25, 3.89, 3.00, 2.85, 2.55, 2.25 | Active Low | Push-Pull | 140 | 12 | 3-pin SOT-23 |
| TC32M | Supervisor | ✓ | – | – | –40 to +85 | 4.5–5.5 | 4.25 | Active Low | Open-Drain | 500 | 50 | 3-pin TO-92, 3-pin SOT-223 |
| TCM809 | Supervisor | – | – | – | –40 to +125 | 1.0–5.5 | 4.50, 4.25, 3.89, 3.00, 2.85, 2.55, 2.25 | Active Low | Push-Pull | 140 | 12 | 3-pin SC-70, 3-pin SOT-23 |
| TCM810 | Supervisor | – | – | – | –40 to +125 | 1.0–5.5 | 4.50, 4.25, 3.89, 3.00, 2.85, 2.55, 2.25 | Active High | Push-Pull | 140 | 12 | 3-pin SC-70, 3-pin SOT-23 |
| MIC705 | Supervisor | ✓ | ✓ | ✓ | –40 to +85 | 1.5–5.5 | 4.65 | Active Low | Push-Pull | 140 | 30 | 8-pin SOIC |
| MIC706 | Supervisor | ✓ | ✓ | ✓ | –40 to +85 | 1.5–5.5 | 4.4 | Active Low | Push-Pull | 140 | 30 | 8-pin SOIC |
| MIC707 | Supervisor | – | – | ✓ | –40 to +85 | 1.5–5.5 | 4.65 | Active Low/High or High/Low | Push-Pull | 140 | 30 | 8-pin SOIC |
| MIC708 | Supervisor | – | – | ✓ | –40 to +85 | 1.5–5.5 | 4.4 | Active Low/High or High/Low | Push-Pull | 140 | 30 | 8-pin SOIC |
| MIC803 | Supervisor | – | – | – | –40 to +125 | 1.0–5.5 | 2.63, 2.93, 3.00, 3.08, 4.00, 4.10, 4.38, 4.63 | Active Low | Open-Drain | 20/140/1100 | 5 | 3-pin SOT23, 3-pin SC70 |
| MIC809 | Supervisor | – | – | – | –40 to +85 | 1.4–5.5 | 2.63, 2.93, 3.08, 4.00, 4.38, 4.63 | Active Low | Push-Pull | 140 | 5 | 3-pin SOT23, 3-pin SC70 |
| MIC809-5 | Supervisor | – | ✓ | – | –40 to +125 | 1.4–5.5 | 2.93 | Active Low | Push-Pull | 30 | 0 | 3-pin SOT23, 3-pin SC70 |
| MIC810 | Supervisor | – | – | – | –40 to +85 | 1.4–5.5 | 2.63, 2.93, 3.08, 4.00, 4.38, 4.63 | Active Low/High or High/Low | Push-Pull | 140 | 5 | 3-pin SOT23, 3-pin SC70 |
| MIC811 | Supervisor | – | ✓ | – | –40 to +85 | 1.4–5.5 | 2.63, 2.93, 3.08, 4.00, 4.38, 4.63 | Active Low | Push-Pull | 140 | 5 | SOT143 |
| MIC812 | Supervisor | – | ✓ | – | –40 to +85 | 1.4–5.5 | 2.63, 2.93, 3.08, 4.00, 4.38, 4.63 | Active Low/High or High/Low | Push-Pull | 140 | 5 | SOT143 |
| MIC1810 | Supervisor | – | – | – | –40 to +85 | 1.5–5.5 | 4.12, 4.37, 4.62 | Active Low | Push-Pull | 100 | 5 | 3-pin SOT23 |
| MIC1815 | Supervisor | – | – | – | –40 to +85 | 1.5–5.5 | 2.55, 2.88 | Active Low | Push-Pull | 100 | 5 | 3-pin SOT23 |
| MIC1232 | Supervisor | ✓ | – | – | –40 to +85 | 4.5–5.5 | 4.37, 4.62 | Active Low/High or High/Low | Push-Pull | 250 | 18 | 8-pin SOIC, 8-pin PDIP |
| MIC1832 | Supervisor | ✓ | ✓ | – | –40 to +85 | 1.4–5.5 | 2.55, 2.88 | Active Low/High or High/Low | Push-Pull | 250 | 15 | 8-pin SOIC, 8-pin PDIP |
| MIC2755 | Supervisor | – | ✓ | – | –40 to +85 | 1.5–5.5 | 1.24 | Active Low | Open-Drain | 700 | 2 | 8-pin MSOP |
| MIC2775 | Supervisor | – | ✓ | – | –40 to +85 | 1.5–5.5 | 1.69, 2.25, 2.34, 2.53, 2.67, 2.81, 2.93, 3.09, 4.43, 4.68 | Active Low/High or High/Low | Push-Pull | 140 | 5 | 5-pin SOT23 |
| MIC2776N | Supervisor | – | ✓ | – | –40 to +85 | 1.5–5.5 | 0.3 | Active Low | Open-Drain | 140 | 3 | 5-pin SOT23 |

## POWER MANAGEMENT: CPU/System Supervisors (Continued)

| Part # | Type | Watchdog Timer | Manual Reset | Power Fail | Operating Temp. Range (°C) | Vcc Range (V) | Nominal Reset Voltage (V) | Reset Type | Output | Typical Reset Pulse Width (ms) | Typical Supply Current (µA) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MIC2776H | Supervisor | – | ✓ | – | –40 to +85 | 1.5–5.5 | 0.3 | Active High | Push-Pull | 140 | 3 | 5-pin SOT23 |
| MIC2776L | Supervisor | – | ✓ | – | –40 to +85 | 1.5–5.5 | 0.3 | Active Low | Push-Pull | 140 | 3 | 5-pin SOT23 |
| MIC2778 | Supervisor | – | – | – | –40 to +85 | 1.5–5.5 | 1.24 with adjustable hysteresis | Active Low | Open-Drain | 140 | 1 | 5-pin SOT23 |
| MIC2779H | Supervisor | – | – | – | –40 to +85 | 1.5–5.5 | 1.24 with adjustable hysteresis | Active High | Push-Pull | 140 | 1 | 5-pin SOT23 |
| MIC2779L | Supervisor | – | – | – | –40 to +85 | 1.5–5.5 | 1.24 with adjustable hysteresis | Active Low | Push-Pull | 140 | 1 | 5-pin SOT23 |
| MIC2785 | Supervisor | – | ✓ | – | –40 to +85 | 1.5–5.5 | 1.62 | Active Low | Push-Pull | 0.025 | 5 | 6-pin 1.2 × 1.2 QFN |
| MIC6315 | Supervisor | – | ✓ | – | –40 to +85 | 1.4–5.5 | 2.63, 2.93, 3.00, 3.08, 4.00, 4.10, 4.38, 4.63 | Active Low | Open-Drain | 20/140/1100 | 5 | 4-pin SOT143 |
| MIC8114 | Supervisor | – | ✓ | – | –40 to +85 | 1.0–5.5 | 3.08 | Active Low | Push-Pull | 790 | 5 | 4-pin SOT143 |
| MIC8115 | Supervisor | – | ✓ | – | –40 to +85 | 1.0–5.5 | 3.08 | Active Low | Push-Pull | 1100 | 5 | 4-pin SOT143 |
| MIC826 | Supervisor | ✓ | ✓ | – | –40 to +125 | 1.0–5.5 | 1.665, 2.188, 2.315, 2.625, 2.925, 3.075, 4.375, 4.625 | Active Low/High or High/Low | Push-Pull | 140 | 4 | 6-pin 1.6 × 1.6 DFN |
| MIC706P/R/S/T | Supervisor | ✓ | ✓ | ✓ | –40 to +85 | 1.5–5.5 | 2.63, 2.93, 3.08 | Active Low | Push-Pull | 140 | 30 | 8-pin SOIC |
| MIC708P/R/S/T | Supervisor | – | – | ✓ | –40 to +85 | 1.5–5.5 | 2.63, 2.93, 3.08 | Active Low/High or High/Low | Push-Pull | 140 | 30 | 8-pin SOIC |
| TC51 | Detector | – | – | – | –40 to +85 | 0.7–10 | 2.94, 2.65, 2.16 (1.6-6V) | Active Low | Open-Drain | 50 | 2 | 3-pin SOT-23A |
| TC54 | Detector | – | – | – | –40 to +85 | 0.7–10 | 4.21, 4.12, 2.94, 2.84, 2.65, 2.06, 1.37 (1.4-6V) | Active Low | CMOS Push-Pull or Open drain | 0 | 1 | 3-pin SOT-89, 3-pin TO-92, 5-pin SOT-23, 3-pin SOT-23A |
| MCP111 | Detector | – | – | – | –40 to +125 | 1.0–5.5 | 1.87(Itemp), 2.29, 2.59, 2.86, 2.87, 3.03, 4.31, 4.56 | Active Low | Open-Drain | 0 | 1 | 3-pin SC-70, 3-pin SOT-89, 3-pin SOT-23, 3-pin TO-92 |
| MCP112 | Detector | – | – | – | –40 to +125 | 1.0–5.5 | 1.87(Itemp), 2.29, 2.59, 2.86, 2.87, 3.03, 4.31, 4.56 | Active Low | Push-Pull | 0 | 1 | 3-pin SC-70, 3-pin SOT-89, 8-pin PDIP, 3-pin SOT-23, 3-pin TO-92 |
| TC52 | Detector | – | – | – | –40 to +85 | 1.5–10 | 4.41, 2.65 (1.5-5V) | Active Low | Open-Drain | 0 | 3 | 5-pin SOT-23 |
| TC53 | Detector | – | – | – | –40 to +85 | 1.5–10 | 2.84, 2.65, 2.16 (1.6-6V, 7V) | Active Low | CMOS Push-Pull or Open drain | 0 | 2 | 5-pin SOT-23 |
| MIC2772 | Dual | – | ✓ | – | –40 to +85 | 1.0–5.5 | 2.93, 3.08, 4.38, 4.63 | Active Low | Open-Drain | 20/140/1100 | 10 | 8-pin 2 × 2 MLF |
| MIC2774N | Dual | – | ✓ | – | –40 to +85 | 1.5–5.5 | 1.69, 2.25, 2.34, 2.53, 2.67, 2.81, 2.93, 3.09, 4.43, 4.68 | Active Low | Open-Drain | 140 | 3.5 | 5-pin SOT23 |
| MIC2774H | Dual | – | ✓ | – | –40 to +85 | 1.5–5.5 | 1.69, 2.25, 2.34, 2.53, 2.67, 2.81, 2.93, 3.09, 4.43, 4.68 | Active High | Push-Pull | 140 | 3.5 | 5-pin SOT23 |
| MIC2774L | Dual | – | ✓ | – | –40 to +85 | 1.5–5.5 | 1.69, 2.25, 2.34, 2.53, 2.67, 2.81, 2.93, 3.09, 4.43, 4.68 | Active Low | Push-Pull | 140 | 3.5 | 5-pin SOT23 |
| MIC2777 | Dual | – | – | – | –40 to +85 | 1.5–5.5 | 1.69, 2.25, 2.34, 2.53, 2.67,2.81, 2.93, 3.09, 4.43, 4.68 | Active Low/High or High/Low | Push-Pull | 140 | 3.5 | 5-pin SOT23 |
| MIC2782 | Push Button | – | Dual | – | –40 to +85 | 1.5–5.5 | Custom options | Active Low | Open-Drain | 500/1000/2000 | 2.2 | 6-pin 0.8 × 1.2 CSP |
| MIC2790 | Push Button | – | ✓ | – | –40 to +125 | 1.5–5.5 | 0.4 | Active Low/High or High/Low | Dual Output Open-Drain and/or Push-Pull | 1.05 | 40 | 8-pin 2 × 2 DFN |
| MIC2791 | Push Button | – | ✓ | – | –40 to +125 | 1.5–5.5 | 0.4 | Active Low/High or High/Low | Dual Output Open-Drain and/or Push-Pull | 1.05 | 40 | 6-pin 1.6 × 1.6 DFN |
| MIC2793 | Push Button | – | ✓ | – | –40 to +125 | 1.5–5.5 | 0.4 | Active Low/High or High/Low | Dual Output Open-Drain and/or Push-Pull | 1.05 | 40 | 8-pin 2 × 2 DFN |

## POWER MANAGEMENT: Power MOSFET Drivers

| Part # | Drivers | Configuration | Peak Output Current (source/sink, A) | Maximum Supply Voltage (V) | Output Resistance (source/sink, Ω) | Propagation Delay ($T_{d1}/T_{d2}$, ns) | Rise/Fall Time ($T_r/T_f$, ns) | Capacitive Load Drive | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| **Low-Side Power MOSFET Drivers** | | | | | | | | | | |
| MCP1401 | Single | Inverting | 0.5/0.5 | 18 | 12/10 | 35/35 | 19/15 | 470 pF in 19 ns | Small footprint | 5-pin SOT-23 |
| MCP1402 | Single | Non-inverting | 0.5/0.5 | 18 | 12/10 | 35/35 | 19/15 | 470 pF in 19 ns | Small footprint | 5-pin SOT-23 |
| MCP14A0051 | Single | Inverting | 0.5/0.5 | 18 | 12.5/7.5 | 33/24 | 40/28 | 1000 pF in 40 ns | Enable pin, small footprint | 6-pin SOT-23, 6-pin 2 × 2 DFN |
| MCP14A0052 | Single | Non-inverting | 0.5/0.5 | 18 | 12.5/7.5 | 33/24 | 40/28 | 1000 pF in 40 ns | Enable pin, small footprint | 6-pin SOT-23, 6-pin 2 × 2 DFN |
| TC1410N | Single | Non-inverting | 0.5/0.5 | 16 | 16/16 | 30/30 | 25/25 | 500 pF in 25 ns | | 8-pin SOIC, 8-pin MSOP, 8-pin PDIP |
| TC1411N | Single | Non-inverting | 1.0/1.0 | 16 | 8/8 | 30/30 | 25/25 | 1000 pF in 25 ns | | 8-pin SOIC, 8-pin MSOP, 8-pin PDIP |
| MIC4416 | Single | Non-Inverting | 1.2/1.2 | 18 | 3.5/3.5 | 33/23 | 14/16 | 1000 pF in 16 ns | | SOT-143 |
| MIC4417 | Single | Inverting | 1.2/1.2 | 18 | 3.5/3.5 | 33/23 | 14/16 | 1000 pF in 16 ns | | SOT-143 |
| TC1426 | Dual | Inverting | 1.2/1.2 | 16 | 12/8 | 36/43 | 23/17 | 1000 pF in 38 ns | | 8-pin SOIC, 8-pin PDIP |
| TC1427 | Dual | Non-inverting | 1.2/1.2 | 16 | 12/8 | 36/43 | 23/17 | 1000 pF in 38 ns | | 8-pin SOIC, 8-pin PDIP |
| TC1428 | Dual | Complimentary | 1.2/1.2 | 16 | 12/8 | 36/43 | 23/17 | 1000 pF in 38 ns | | 8-pin SOIC, 8-pin PDIP |
| MIC4467 | Quad | Inverting | 1.2/1.2 | 18 | 5/5 | 30/45 | 14/13 | 1000 pF in 25 ns | Latch-up Protected; Input to –5V | 16-pin WSOIC, 14-pin PDIP, 100 pF in 19 ns |
| MIC4468 | Quad | Non-inverting | 1.2/1.2 | 18 | 5/5 | 30/45 | 14/13 | 1000 pF in 25 ns | Latch-up Protected; Input to –5V | 16-pin WSOIC, 14-pin PDIP, 100 pF in 19 ns |
| MIC4469 | Quad | Complimentary | 1.2/1.2 | 18 | 5/5 | 30/45 | 14/13 | 1000 pF in 25 ns | Latch-up Protected; Input to –5V. SMD | 16-pin WSOIC, 14-pin PDIP, 100 pF in 19 ns |
| TC4467 | Quad | Inverting | 1.2/1.2 | 18 | 10/10 | 40/40 | 15/15 | 470 pF in 15 ns | | 16-pin SOIC, 14-pin PDIP |
| TC4468 | Quad | Non-inverting | 1.2/1.2 | 18 | 10/10 | 40/40 | 15/15 | 470 pF in 15 ns | | 16-pin SOIC, 14-pin PDIP |
| TC4469 | Quad | Complimentary | 1.2/1.2 | 18 | 10/10 | 40/40 | 15/15 | 470 pF in 15 ns | | 16-pin SOIC, 14-pin PDIP |
| MCP14A0151 | Single | Inverting | 1.5/1.5 | 18 | 4.5/3 | 33/24 | 11/10 | 1000 pF in 11.5 ns | Low Input Threshold and Enable Pin | 6-pin SOT-23, 6-pin 2 × 2 DFN |
| MCP14A0152 | Single | Non-inverting | 1.5/1.5 | 18 | 4.5/3 | 33/24 | 11/10 | 1000 pF in 11.5 ns | Low Input Threshold and Enable Pin | 6-pin SOT-23, 6-pin 2 × 2 DFN |
| MCP1415 | Single | Inverting | 1.5/1.5 | 18 | 6/4 | 44/47 | 18/21 | 470 pF in 13 ns | Small footprint | 5-pin SOT-23 |
| MCP1416 | Single | Non-inverting | 1.5/1.5 | 18 | 6/4 | 44/47 | 18/21 | 470 pF in 13 ns | Small footprint | 5-pin SOT-23 |
| MIC4414 | Single | Non-inverting | 1.5/1.5 | 18 | 3.5/3.5 | 44/47 | 18/21 | 1000 pF in 12 ns | Very small footprint | 1.2 × 1.2 QFN |
| MIC4415 | Single | Inverting | 1.5/1.5 | 18 | 3.5/3.5 | 29/30 | 12/12 | 1000 pF in 12 ns | Very small footprint | 1.2 × 1.2 QFN |
| TC4626 | Single | Inverting | 1.5/1.5 | 6 | 10/8 | 29/30 | 33/27 | 1000 pF in 40 ns | Boosted drive voltage | 16-pin SOIC, 8-pin PDIP |
| TC4627 | Single | Non-inverting | 1.5/1.5 | 6 | 10/8 | 35/45 | 33/27 | 1000 pF in 40 ns | Boosted drive voltage | 16-pin SOIC, 8-pin PDIP |
| TC4404 | Single | Inverting | 1.5/1.5 | 18 | 7/7 | 15/32 | 25/25 | 1000 pF in 30 ns | Open - drain | 8-pin SOIC, 8-pin PDIP |
| TC4405 | Single | Non-inverting | 1.5/1.5 | 18 | 7/7 | 15/32 | 25/25 | 1000 pF in 30 ns | Open - drain | 8-pin SOIC, 8-pin PDIP |
| MCP14A0153 | Dual | Inverting | 1.5/1.5 | 18 | 4.5/3 | 25/24 | 11/10 | 1000 pF in 11.5 ns | Low Input Threshold and Enable Pin | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN |
| MCP14A0154 | Dual | Non-inverting | 1.5/1.5 | 18 | 4.5/3 | 25/24 | 11/10 | 1000 pF in 11.5 ns | Low Input Threshold and Enable Pin | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN |
| MCP14A0155 | Dual | Complimentary | 1.5/1.5 | 18 | 4.5/3 | 25/24 | 11/10 | 1000 pF in 11.5 ns | Low Input Threshold and Enable Pin | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN |
| TC4426A | Dual | Inverting | 1.5/1.5 | 18 | 7/7 | 30/30 | 25/25 | 1000 pF in 25 ns | | 8-pin SOIC, 8-pin MSOP, 8-pin PDIP, 8-pin 6 × 5 DFN-S |
| TC4427A | Dual | Non-inverting | 1.5/1.5 | 18 | 7/7 | 30/30 | 25/25 | 1000 pF in 25 ns | | 8-pin SOIC, 8-pin MSOP, 8-pin PDIP, 8-pin 6 × 5 DFN-S |
| TC4428A | Dual | Complimentary | 1.5/1.5 | 18 | 7/7 | 30/30 | 25/25 | 1000 pF in 25 ns | | 8-pin SOIC, 8-pin MSOP, 8-pin PDIP, 8-pin 6 × 5 DFN-S |
| MIC4426 | Dual | Inverting | 1.5/1.5 | 18 | 6/6 | 17/23 | 18/15 | 1000 pF in 18 ns | | 8-pin SOIC, 8-pin MSOP, 8-pin PDIP, 8-pin CerDIP |
| MIC4427 | Dual | Non-inverting | 1.5/1.5 | 18 | 6/6 | 17/23 | 18/15 | 1000 pF in 18 ns | | 8-pin SOIC, 8-pin MSOP, 8-pin PDIP, 8-pin CerDIP |
| MIC4428 | Dual | Complimentary | 1.5/1.5 | 18 | 6/6 | 17/23 | 18/15 | 1000 pF in 18 ns | | 8-pin SOIC, 8-pin MSOP, 8-pin PDIP, 8-pin CerDIP |
| MIC4126 | Dual | Inverting | 1.5/1.5 | 20 | 6/6 | 37/40 | 13/15 | 1000 pF in 15 ns | | 8-pin eSOIC, 8-pin eMSOP-8, 3 × 3 DFU |

## POWER MANAGEMENT: Power MOSFET Drivers (Continued)

| Part # | Drivers | Configuration | Peak Output Current (source/sink, A) | Maximum Supply Voltage (V) | Output Resistance (source/sink, Ω) | Propagation Delay ($T_{d1}$/$T_{d2}$, ns) | Rise/Fall Time ($T_r$/$T_f$, ns) | Capacitive Load Drive | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| **Low-Side Power MOSFET Drivers (Continued)** | | | | | | | | | | |
| MIC4127 | Dual | Non-inverting | 1.5/1.5 | 20 | 6/6 | 37/40 | 13/15 | 1000 pF in 15 ns | | 8-pin eSOIC, 8-pin eMSOP-8, 3 × 3 DFN |
| MIC4128 | Dual | Complimentary | 1.5/1.5 | 20 | 6/6 | 37/40 | 13/15 | 1000 pF in 15 ns | | 8-pin eSOIC, 8-pin eMSOP-8, 3 × 3 DFN |
| MCP14E6 | Dual | Inverting | 2.0/2.0 | 18 | 5/5 | 45/45 | 12/15 | 1000 pF in 15 ns | Enable pin | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP14E7 | Dual | Non-inverting | 2.0/2.0 | 18 | 5/5 | 45/45 | 12/15 | 1000 pF in 15 ns | Enable pin | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP14E8 | Dual | Complimentary | 2.0/2.0 | 18 | 5/5 | 45/45 | 12/15 | 1000 pF in 15 ns | Enable pin | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| TC1412 | Single | Inverting | 2.0/2.0 | 16 | 4/4 | 35/35 | 18/18 | 1000 pF in 18 ns | | 8-pin SOIC, 8-pin MSOP, 8-pin PDIP |
| TC1412N | Single | Non-Inverting | 2.0/2.0 | 16 | 4/4 | 35/35 | 18/18 | 1000 pF in 18 ns | | 8-pin SOIC, 8-pin MSOP, 8-pin PDIP |
| MIC4478 | Dual | Non-Inverting | 2.5/2.5 | 32 | 6/3 | 160/70 | 120/45 | 1,000pF in 45 ns | | 8-pin SOIC |
| MIC4479 | Dual | Inverting | 2.5/2.5 | 32 | 6/3 | 160/70 | 120/45 | 1,000pF in 45 ns | | 8-pin SOIC |
| MIC4480 | Dual | Complimentary | 2.5/2.5 | 32 | 6/3 | 160/70 | 120/45 | 1,000pF in 45 ns | | 8-pin SOIC |
| TC4423A | Dual | Inverting | 3.0/3.0 | 18 | 2.2/2.8 | 40/41 | 12/12 | 1800 pF in 12 ns | | 8-pin SOIC, 16-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| TC4424A | Dual | Non-Inverting | 3.0/3.0 | 18 | 2.2/2.8 | 40/41 | 12/12 | 1800 pF in 12 ns | | 8-pin SOIC, 16-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| TC4425A | Dual | Complimentary | 3.0/3.0 | 18 | 2.2/2.8 | 40/41 | 12/12 | 1800 pF in 12 ns | | 8-pin SOIC, 16-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP14E9 | Dual | Inverting | 3.0/3.0 | 18 | 4/4 | 45/45 | 14/17 | 1800 pF in 17 ns | Enable pin | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP14E10 | Dual | Non-Inverting | 3.0/3.0 | 18 | 4/4 | 45/45 | 14/17 | 1800 pF in 17 ns | Enable pin | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP14E11 | Dual | Complimentary | 3.0/3.0 | 18 | 4/4 | 45/45 | 14/17 | 1800 pF in 17 ns | Enable Pin | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP14A0301 | Single | Interverting | 3.0/3.0 | 18 | 2.2/1.5 | 15/18 | 13/12 | 1,800 pF in 13 ns | Low Input Threshold, Enable Pin | 8-pin MSOP, 8-pin SOIC, 8-pin 2 × 2 WDFN |
| MCP14A0302 | Single | Non-Inverting | 3.0/3.0 | 18 | 2.2/1.5 | 15/18 | 13/12 | 1,800 pF in 13 ns | Low Input Threshold and Enable Pin | 8-pin MSOP, 8-pin SOIC, 8-pin 2 × 2 WDFN |
| TC1413N | Single | Non-Inverting | 3.0/3.0 | 16 | 2.7/2.7 | 35/35 | 20/20 | 1800 pF in 20 ns | | 8-pin SOIC, 8-pin MSOP, 8-pin PDIP |
| MIC4123 | Dual | Inverting | 3.0/3.0 | 20 | 5/5 | 44/59 | 11/11 | 1,800 pF in 11 ns | | 8-pin eSOIC, 4 × 4 |
| MIC4124 | Dual | Non-Inverting | 3.0/3.0 | 20 | 5/5 | 44/59 | 11/11 | 1,800 pF in 11 ns | | 8-pin eSOIC, 4 × 4 |
| MIC4125 | Dual | Complimentary | 3.0/3.0 | 20 | 5/5 | 44/59 | 11/11 | 1,800 pF in 11 ns | | 8-pin eSOIC, 4 × 4 |
| MIC4423 | Dual | Inverting | 3.0/3.0 | 18 | 5/5 | 33/38 | 23/25 | 1,800 pF in 23ns | | 8-pin SOIC, 16-pin WSOIC, 8-pin PDIP |
| MIC4424 | Dual | Non-Inverting | 3.0/3.0 | 18 | 5/5 | 33/38 | 23/25 | 1,800 pF in 23ns | | 8-pin SOIC, 16-pin WSOIC, 8-pin PDIP, 8-pin CerDIP |
| MIC4425 | Dual | Complimentary | 3.0/3.0 | 18 | 5/5 | 33/38 | 23/25 | 1,800 pF in 23ns | | 8-pin SOIC, 16-pin WSOIC, 8-pin PDIP |
| MIC4223 | Dual | Inverting | 4.0/4.0 | 18 | 30/16 | 25/35 | 15/15 | 2000 pF in 15 ns | Enable pin | 8-pin SOIC, 8-pin eMSOP |
| MIC4224 | Dual | Non-Inverting | 4.0/4.0 | 18 | 30/16 | 25/35 | 15/15 | 2000 pF in 15 ns | Enable pin | 8-pin SOIC, 8-pin eMSOP |
| MIC4225 | Dual | Complimentary | 4.0/4.0 | 18 | 30/16 | 25/35 | 15/15 | 2000 pF in 15 ns | Enable pin | 8-pin SOIC, 8-pin eMSOP |
| MCP14E3 | Dual | Inverting | 4.0/4.0 | 18 | 2.5/2.5 | 46/50 | 15/18 | 2200 pF in 15 ns | Enable pin | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP14E4 | Dual | Non-Inverting | 4.0/4.0 | 18 | 2.5/2.5 | 46/50 | 15/18 | 2200 pF in 15 ns | Enable pin | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP14E5 | Dual | Complimentary | 4.0/4.0 | 18 | 2.5/2.5 | 46/50 | 15/18 | 2200 pF in 15 ns | Enable pin | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP1403 | Dual | Inverting | 4.5/4.5 | 18 | 2.2/2.8 | 40/40 | 15/18 | 2200 pF in 15 ns | | 8-pin SOIC, 16-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP1404 | Dual | Non-Inverting | 4.5/4.5 | 18 | 2.2/2.8 | 40/40 | 15/18 | 2200 pF in 15 ns | | 8-pin SOIC, 16-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP1405 | Dual | Complimentary | 4.5/4.5 | 18 | 2.2/2.8 | 40/40 | 15/18 | 2200 pF in 15 ns | | 8-pin SOIC, 16-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP14A0451 | Single | Inverting | 4.5/4.5 | 18 | 1.6/1.2 | 16/19 | 9/9 | 2200 pF in 9.5 ns | Low Input Threshold, Enable | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 2 DFN |
| MCP14A0452 | Single | Non-Inverting | 4.5/4.5 | 18 | 1.6/1.2 | 16/19 | 9/9 | 2200 pF in 9.5 ns | Low Input Threshold, Enable | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 2 DFN |
| MIC4120 | Single | Non-Inverting | 6.0/6.0 | 20 | 5/5 | 45/50 | 12/13 | 2200 pF in 12 ns | | 8-pin eSOIC, 3 × 3 |
| MIC4129 | Single | Inverting | 6.0/6.0 | 20 | 5/5 | 45/50 | 12/13 | 2200 pF in 12 ns | | 8-pin eSOIC, 3 × 3 |

## POWER MANAGEMENT: Power MOSFET Drivers (Continued)

| Part # | Drivers | Configuration | Peak Output Current (source/sink, A) | Maximum Supply Voltage (V) | Output Resistance (source/sink, Ω) | Propagation Delay ($T_{d1}/T_{d2}$, ns) | Rise/Fall Time ($T_r/T_f$, ns) | Capacitive Load Drive | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| **Low-Side Power MOSFET Drivers (Continued)** | | | | | | | | | | |
| MIC4420 | Single | Non-Inverting | 6.0/6.0 | 18 | 2.8/2.5 | 18/48 | 12/13 | 2200 pF in 12 ns | | 8-pin SOIC, 8-pin MSOP, 8-pin PDIP, 5-pin TO-220, 8-pin CerDIP |
| MIC4429 | Single | Inverting | 6.0/6.0 | 18 | 2.8/2.5 | 18/48 | 12/13 | 2200 pF in 12 ns | | 8-pin SOIC, 8-pin MSOP, 8-pin PDIP, 5-pin TO-220 |
| MIC44F18 | Single | Non-Inverting | 6.0/6.0 | 13 | 2/2 | 15/13 | 10/10 | 1000 pF In 10 ns | Enable pin | 8-pin eMSOP, 2 × 2 QFN |
| MIC44F19 | Single | Inverting | 6.0/6.0 | 13 | 2/2 | 15/13 | 10/10 | 1000 pF In 10 ns | Enable pin | 8-pin eMSOP, 2 × 2 QFN |
| MIC44F20 | Single | Inverting | 6.0/6.0 | 13 | 2/2 | 15/13 | 10/10 | 1000 pF In 10 ns | Enable pin | 8-pin eMSOP, 2 × 2 QFN |
| MCP1406 | Single | Inverting | 6.0/6.0 | 18 | 2.1/1.5 | 40/40 | 20/20 | 2500 pF in 20 ns | | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP1407 | Single | Non-Inverting | 6.0/6.0 | 18 | 2.1/1.5 | 40/40 | 20/20 | 2500 pF in 20 ns | | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MCP14A0601 | Single | Inverting | 6.0/6.0 | 18 | 2.0/2.3 | 29/29 | 15/15 | 2500 pF in 10 ns | Low Logic Input, Enable | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN |
| MCP14A0602 | Single | Non-Inverting | 6.0/6.0 | 18 | 2.0/2.3 | 29/29 | 15/15 | 2500 pF in 10 ns | Low Logic Input, Enable | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN |
| TC4421A | Single | Inverting | 9.0/9.0 | 18 | 1.25/0.8 | 38/42 | 28/26 | 4700 pF in 15 ns | | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| TC4422A | Single | Non-Inverting | 9.0 / 9.0 | 18 | 1.25 / 0.8 | 38/42 | 28/26 | 4700 pF in 15 ns | | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| MIC4421A | Single | Inverting | 9.0 / 9.0 | 18 | 0.8/0.6 | 15/35 | 20/24 | 10,000 pF in 24 ns | | 8-pin PDIP, 8-pin SOIC, 5-pin TO-220 |
| MIC4422A | Single | Non-Inverting | 9.0 / 9.0 | 18 | 0.8/0.6 | 15/35 | 20/24 | 10,000 pF in 24 ns | | 8-pin PDIP, 8-pin SOIC, 5-pin TO-220 |
| MIC4451 | Single | Inverting | 12.0/12.0 | 18 | 0.8/0.6 | 25/40 | 20/24 | 10,000 pF in 24 ns | | 8-pin PDIP, 8-pin SOIC, 5-pin TO-220 |
| MIC4452 | Single | Non-Inverting | 12.0/12.0 | 18 | 0.8/0.6 | 25/40 | 20/24 | 10,000 pF in 24 ns | | 8-pin PDIP, 8-pin SOIC, 5-pin TO-220 |
| TC4451 | Single | Inverting | 12.0/12.0 | 18 | 1.0/0.9 | 44/44 | 30/32 | 10,000 pF in 21 ns | | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| TC4452 | Single | Non-Inverting | 12.0/12.0 | 18 | 1.0/0.9 | 44/44 | 30/32 | 10,000 pF in 21 ns | | 8-pin SOIC, 8-pin PDIP, 8-pin 6 × 5 DFN |
| **High-Side Power MOSFET Drivers** | | | | | | | | | | |
| TC4431 | High-Side Single | Inverting | 3.0/1.5 | 30 | 7/7 | 62/78 | 25/33 | 1000 pF in 25 ns | 30V, high-side driver | 8-pin SOIC, 8-pin PDIP |
| TC4432 | High-Side Single | Non-inverting | 3.0/1.5 | 30 | 7/7 | 62/78 | 25/33 | 1000 pF in 25 ns | 30V, high-side driver | 8-pin SOIC, 8-pin PDIP |
| TC4403 | Floating Load Driver | Non-inverting | 1.5/1.5 | 18 | 2.8/3.5 | 33/38 | 28/32 | 1800 pF in 25 ns | Floating load driver | 8-pin PDIP |
| MIC5011 | High-Side or Low Side Single | Non-Inverting | 950 µA* | 32 | N/A | N/A | 25 µs/4 µs | 1000 pF in 60 µs | Less than 1 µA in Standby Mode | 8-pin SOIC, 8-pin PDIP |
| MIC5013 | High-Side or Low Side Single | Non-Inverting | 225 µA* | 32 | N/A | N/A | 60 µs/4 µs | 1000 pF in 60µs | With over-current shutdown and a fault flag | 8-pin SOIC, 8-pin PDIP |
| MIC5014 | High-Side or Low Side Single | Non-Inverting | 800 µA* | 30 | N/A | N/A | 90 µs/6 µs | 1000 pF in 90 µs | Withstands 60V transient and Reverse battery protected to –20V | 8-pin SOIC, 8-pin PDIP |
| MIC5015 | High-Side or Low Side Single | Inverting | 800 µA* | 30 | N/A | N/A | 90 µs/6 µs | 1000 pF in 90 µs | Withstands 60V transient and Reverse battery protected to –20V | 8-pin SOIC, 8-pin PDIP |
| MIC5018 | High-Side or Low Side Single | Non-Inverting | 10 µA* | 9 | N/A | N/A | 750 µs/10 µs | 3,000 pF in 2.1 ms | Small Package | SOT-143 |
| MIC5019 | High-Side or Low Side Single | Non-Inverting | 10 µA* | 9 | N/A | N/A | 440 µs/5.56 µs | 3,000 pF in 1.34 ms | Ultra Small 1.2 × 1.2 mm DFN | 4-pin DFN |
| MIC5021 | High-Side or Low Side Single | Non-Inverting | 5600 µA* | 36 | N/A | 500/800 | 400ns/400ns | 2,000 pF in 550 ns | 100 kHz operation guaranteed over full temperature and operating voltage range | 8-pin SOIC, 8-pin PDIP |
| MIC5060 | High-Side or Low Side Single | Non-Inverting | 800 µA* | 30 | N/A | N/A | 90 µs/6 µs | 1,000 pF in 90 µs | Withstands 60V transient and Reverse battery protected to –20V | 8-pin MLF |

## POWER MANAGEMENT: Power MOSFET Drivers (Continued)

| Part # | Drivers | Configuration | Peak Output Current (source/sink, A) | Maximum Supply Voltage (V) | Output Resistance (source/sink, Ω) | Propagation Delay ($T_{d1}/T_{d2}$, ns) | Rise/Fall Time ($T_r/T_f$, ns) | Capacitive Load Drive | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| **Synchronous Power MOSFET Drivers** | | | | | | | | | | |
| MCP14628 | Half Bridge Driver | Dual Inputs | 2.0/3.5 | 5.5 (36V Boot Pin) | 1/1 (0.5 on low side) | 15/22 | 10/10 | 3300 pF in 10 ns | Continuous or discontinuous operation | 8-pin SOIC, 8-pin 3 × 3 DFN |
| MCP14700 | Half Bridge Driver | Dual Inputs | 2.0/3.5 | 5.5 (36V Boot Pin) | 1/1 (0.5 on low side) | 15/22 | 10/10 | 3300 pF in 10 ns | Allows external dead time control | 8-pin SOIC, 8-pin 3 × 3 DFN |
| MIC4100 | Half Bridge Driver | Dual Inputs | 2.0/2.0 | 16 (100V Boot Pin) | 3.0/3.0 | 27/27 | 10/10 | 1000 pF in 10 ns | | 8-pin SOIC |
| MIC4101 | Half Bridge Driver | Dual Inputs | 2.0/2.0 | 16 (100V Boot Pin) | 3.0/3.0 | 31/31 | 10/10 | 1000 pF in 10 ns | | 8-pin SOIC |
| MIC4102 | Half Bridge Driver | Single PWM | 3.0/2.0 | 16 (100V Boot Pin) | 2.5/1.5 | 60/70 | 10/6 | 1000 pF in 10 ns | Adaptive Dead Time and Anti-Shoot-Through Circuitry | 8-pin SOIC |
| MIC4103 | Half Bridge Driver | Dual Inputs | 3.0/2.0 | 16 (100V Boot Pin) | 2.5/1.25 | 24/24 | 10/6 | 1000 pF in 10 ns | | 8-pin SOIC |
| MIC4104 | Half Bridge Driver | Dual Inputs | 3.0/2.0 | 16 (100V Boot Pin) | 2.5/1.25 | 24/24 | 10/6 | 1000 pF in 10 ns | | 8-pin SOIC |
| MIC4600 | Half Bridge Driver | Dual Inputs, Single PWM | – | 28V | – | – | 15/13.5 | 3000 pF in 15 ns | Internal 5V LDO | 3 × 3 QFN |
| MIC4604 | Half Bridge Driver | Dual Inputs | 1.0/1.0 | 16V (85V Boot Pin) | – | 33/34 | 20/20 | 1000 pF in 20 ns | Small 2.5 × 2.5 mm DFN | 8-pin SOIC, 8-pin 2.5 × 2.5 DFN |
| MIC4605 | Half Bridge Driver | Dual Inputs, Single PWM | 1.0/1.0 | 16V (85V Boot Pin) | – | 35/35 | 20/20 | 1000 pF in 20 ns | Adaptive Dead Time and Anti-Shoot-Through Circuitry | 8-pin SOIC, 8-pin 2.5 × 2.5 DFN |
| MIC4606 | Full Bridge Driver | Dual Inputs, Single PWM | 1.0/1.0 | 16V (85V Boot Pin) | – | 35/35 | 20/20 | 1000 pF in 20 ns | Adaptive Dead Time and Anti-Shoot-Through Circuitry | 4 × 4 QFN |
| MIC4607 | 3 Phase Driver | Dual Inputs, Single PWM | 1.0/1.0 | 16V (85V Boot Pin) | – | 35/35 | 20/20 | 1000 pF in 20 ns | Adaptive Dead Time and Anti-Shoot-Through Circuitry | 4 × 5 QFN, 24-pin TSSOP |
| MIC4608 | Half Bridge Driver | Dual Inputs, Single PWM | 1.0/1.0 | 20V (600V Boot Pin) | – | 450/450 | 31/31 | – | 600V Operation, State PIN | 14-pin SOIC |
| MIC4609 | 3 Phase Driver | Dual Inputs | 1.0/1.0 | 20V (600V Boot Pin) | – | 600/550 | 22/20 | – | 600V Operation | 28-wide SOIC |

*Charge pump current

## POWER MANAGEMENT: Battery Chargers

| Part # | Mode | Cell Type | # of Cells | Vcc Range (V) | Cell Voltage (V) | Maximum Charging Current (mA) | Max. Voltage Regulation (%) | Int/Ext FET | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP73113 | Linear | Li-ion/Li-Polymer | 1 | 4 to 16 | 4.1, 4.2, 4.35, 4.4 | 1100 | ±0.5 | Int | 6.5V Overvoltage Protection | 10-pin 3 × 3 DFN |
| MCP73114 | Linear | Li-ion/Li-Polymer | 1 | 4 to 16 | 4.1, 4.2, 4.35, 4.4 | 1100 | ±0.5 | Int | 5.8V Overvoltage Protection | 10-pin 3 × 3 DFN |
| MCP73123 | Linear | LiFePO4 | 1 | 4 to 16 | 3.6 | 1100 | ±0.5 | Int | 6.5V Overvoltage Protection, LiFePO4 charging | 10-pin 3 × 3 DFN |
| MCP73213 | Linear | Li-ion/Li-Polymer | 2 | 4 to 16 | 8.2, 8.4, 8.7, 8.8 | 1100 | ±0.6 | Int | 13V Overvoltage Protection | 10-pin 3 × 3 DFN |
| MCP73223 | Linear | LiFePO4 | 2 | 4 to 16 | 7.2 | 1100 | ±0.6 | Int | 13V Overvoltage Protection, LiFePO4 charging | 10-pin 3 × 3 DFN |
| MCP73826 | Linear | Li-Ion/Li-Polymer | 1 | 4.5 to 5.5 | 4.1, 4.2 | N/A | ±1.0 | Ext | Small size, charge current set by external FET | 6-pin SOT-23 |
| MCP73827 | Linear | Li-Ion/Li-Polymer | 1 | 4.5 to 5.5 | 4.1, 4.2 | N/A | ±1.0 | Ext | Mode indicator, Charge current monitor, Charge current set by external FET | 8-pin MSOP |
| MCP73828 | Linear | Li-Ion/Li Polymer | 1 | 4.5 to 5.5 | 4.1, 4.2 | N/A | ±1.0 | Ext | Temperature monitor, Charge current set by external FET | 8-pin MSOP |
| MCP73841 | Linear | Li-Ion/Li-Polymer | 1 | 4.5 to 12 | 4.1, 4.2 | N/A | ±0.5 | Ext | Safety charge timers, Temperature monitor, Charge current set by external FET | 10-pin MSOP |
| MCP73841 | Linear | Li-Ion/Li-Polymer | 1 | 4.5 to 12 | 4.1, 4.2 | N/A | ±0.5 | Ext | Safety charge timers, Temperature monitor, Charge current set by external FET | 10-pin MSOP |
| MCP73842 | Linear | Li-Ion/Li-Polymer | 2 | 8.7 to 12 | 8.2, 8.4 | N/A | ±0.5 | Ext | Safety charge timers, Temperature monitor, Charge current set by external FET | 10-pin MSOP |

## POWER MANAGEMENT: Battery Chargers (Continued)

| Part # | Mode | Cell Type | # of Cells | Vcc Range (V) | Cell Voltage (V) | Maximum Charging Current (mA) | Max. Voltage Regulation (%) | Int/Ext FET | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP73843 | Linear | Li-Ion/Li-Polymer | 1 | 4.5 to 12 | 4.1, 4.2 | N/A | ±0.5 | Ext | Safety charge timers, Charge current set by external FET | 8-pin MSOP |
| MCP73844 | Linear | Li-Ion/Li-Polymer | 2 | 8.7 to 12 | 8.2, 8.4 | N/A | ±0.5 | Ext | Safety charge timers, Charge current set by external FET | 8-pin MSOP |
| MCP73811 | Linear | Li-Ion/Li-Polymer | 1 | 3.7 to 6.0 | 4.2 | 500 | ±1.0 | Int | Selectable charge current (100 mA, 500 mA), Charge enable input | 5-pin SOT-23 |
| MCP73812 | Linear | Li-Ion/Li Polymer | 1 | 3.7 to 6.0 | 4.2 | 500 | ±1.0 | Int | Programmable charge current (100 mA, 500 mA), Charge enable input | 5-pin SOT-23 |
| MCP73830/L | Linear | Li-Ion/Li-Polymer | 1 | 3.75 to 6.0 | 4.2 | 1000/200 | ±0.75 | Int | Soft-start, Charge enable pin | 6-pin 2 × 2 TDFN |
| MCP73831 | Linear | Li-Ion/Li-Polymer | 1 | 3.7 to 6.0 | 4.2, 4.35, 4.4, 4.5 | 500 | ±0.75 | Int | UVLO, Thermal regulation, Programmable charge current, Tri-state STAT pin | 5-pin SOT-23, 8-pin 2 × 3 DFN |
| MCP73832 | Linear | Li-Ion/Li-Polymer | 1 | 3.7 to 6.0 | 4.2, 4.35, 4.4, 4.5 | 500 | ±0.75 | Int | UVLO, Thermal regulation, Programmable charge current, Open-drain STAT pin | 5-pin SOT-23, 8-pin 2 × 3 DFN |
| MCP73853 | Linear | Li-Ion/Li-Polymer | 1 | 4.5 to 5.5 | 4.1, 4.2 | 500 | ±0.5 | Int | USB control, Safety charge timers, Temperature monitor, Thermal regulation | 16-pin 4 × 4 QFN |
| MCP73855 | Linear | Li-Ion/Li-Polymer | 1 | 4.5 to 5.5 | 4.1, 4.2 | 500 | ±0.5 | Int | USB control, Safety charge timers, Thermal regulation | 10-pin 3 × 3 DFN |
| MCP73833 | Linear | Li-Ion/Li-Polymer | 1 | 3.7 to 6.0 | 4.2, 4.35, 4.4, 4.5 | 1000 | ±0.75 | Int | UVLO, Thermal regulation, Thermistor input, LDO Test mode, Multiple $V_{REG}$ outputs, Safety timer, Power good output | 10-pin 3 × 3 DFN, 10-pin MSOP |
| MCP73834 | Linear | Li-Ion/Li-Polymer | 1 | 3.7 to 6.0 | 4.2, 4.35, 4.4, 4.5 | 1000 | ±0.75 | Int | UVLO, Thermal regulation, Thermistor input, LDO Test mode, Multiple $V_{REG}$ outputs, Safety timer, Timer enable input | 10-pin 3 × 3 DFN, 10-pin MSOP |
| MCP73837 | Linear | Li-Ion/Li-Polymer | 1 | 3.7 to 6.0 | 4.2, 4.35, 4.4, 4.5 | 1000 | ±0.75 | Int | Dual input (USB, DC input from adapter) auto-switching, UVLO, Thermal regulation, Thermistor input, Power good output | 10-pin 3 × 3 DFN, 10-pin MSOP |
| MCP73838 | Linear | Li-Ion/Li Polymer | 1 | 3.7 to 6.0 | 4.2, 4.35, 4.4, 4.5 | 1000 | ±0.75 | Int | Dual input (USB, DC input from adapter) auto-switching, UVLO, Thermal regulation, Timer enable input | 10-pin 3 × 3 DFN, 10-pin MSOP |
| MCP73871 | Linear | Li-Ion/Li-Polymer | 1 | 3.75 to 6.0 | 4.1, 4.2, 4.35, 4.4 | 1500 (A/C Adapter) 500 (USB) | ±0.5 | Int | Simultaneous charging of load and battery, Load-dependent charging, Multiple programmable charge currents | 20-pin 4 × 4 QFN, 20-pin SSOP |

## POWER MANAGEMENT: Hot Swap Controllers & E-Fuse

| Part # | Number of Outputs | Input Voltage Range (V) | Latch Off | Auto Retry | OVLO | UVLO | Number of Power Good | Description | Packages |
|---|---|---|---|---|---|---|---|---|---|
| MIC2085 | 1 | +2.3 to +16.5 | ✓ | – | Adjustable | Adjustable | – | Pin-Pin equivalent to LTC1642 | 16-pin QSOP |
| MIC2582 | 1 | +2.3 to +13.2 | ✓ | – | – | Adjustable | – | Pin-Pin equivalent to LTC1422, dual-level fault detection | 8-pin SOIC |
| MIC2583 | 1 | +2.3 to +13.2 | ✓ | – | – | Adjustable | 1 Active High | Dual level fault detection, CL discharge capability | 16-pin QSOP |
| MIC2583R | 1 | +2.3 to +13.2 | – | ✓ | – | Adjustable | 1 Active High | Dual level fault detection, CL discharge capability | 16-pin QSOP |
| MIC2584 | 2 | Ch 1: +2.3 to +13.2<br>Ch 2: +1.0 to +13.2 | ✓ | – | Adjustable | Adjustable | 2 Active High | Output voltage tracking with dual-level fault tracking | 16-pin TSSOP |
| MIC2587 | 1 | +10 to +80 | ✓ | – | – | Adjustable | 1 Active High/Low | Pin-pin equivalent to LTC1641-1 | 8-pin SOIC |
| MIC2587R | 1 | +10 to +80 | – | ✓ | – | Adjustable | 1 Active High/Low | Pin-pin equivalent to LTC1641-2 | 8-pin SOIC |
| MIC2588 | 1 | –19 to –80 | ✓ | – | Adjustable | Adjustable | 1 Active High/Low | Pin-pin equivalent to LTC1640, LT1640A, LT4250 | 8-pin SOIC |
| MIC2594 | 1 | –19 to –80 | ✓ | – | Adjustable | Adjustable | 1 Active High/Low | MIC2588 with programmable UVLO hysteresis | 8-pin SOIC |
| MIC2595 | 1 | –19 to –80 | ✓ | – | Adjustable | Adjustable | 3 Active High/Low | Staggered power good provides load sequencing, programmable UVLO hysteresis | 14-pin SOIC |
| MIC2595R | 1 | –19 to –80 | – | ✓ | Adjustable | Adjustable | 3 Active High/Low | Staggered power good provides load sequencing, programmable UVLO hysteresis | 14-pin SOIC |
| LX8204 | 1 | 10.8 to 13.2 | ✓ | – | - | Fixed | - | 3.5A 12V E-Fuse with Hot-Swap and Voltage Surge Protection | 10-pin 3 x 3 DFN |
| LX8233 | 1 | 4.2 to 5.75 | ✓ | – | - | Fixed | - | 2.5A 5V E-Fuse with Bidirectional Protection Switch and DevSleep/Disable Mode | 13-pin 2 x 3 VQFN |
| LX8237 | 2 | 4.3 to 13.2 | ✓ | – | - | Fixed | - | Dual E-Fuse for 12V and 5V, Dual Power Regulators, I2C Control and Curent Monitoring, P3 Disable | 24-pin 3.5 x 4.5 QFN |
| LX8247 | 2 | 4.3 to 13.2 | ✓ | – | - | Fixed | - | Dual E-Fuse for 12V and 5V, I2C Control and Curent Monitoring, P3 Disable | 16-pin 3 x 3 QFN |

## POWER MANAGEMENT: Power Switches

| Part # | Description | USB Port Power Switch (55 mΩ) | High-Speed USB 2.0 Switch | Battery Charger Emulation Profile | 8 Resistor Set Current Limits | Charging Indicator Output | Attach Detection Output | Current Measurement | Power Allocation | Interface | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **USB Port Power Controllers** | | | | | | | | | | | |
| UCS1001-1 | USB Port Power Controller with Charger Emulation | 1 | 1 | 9 | Up to 2.4A | ✓ | – | – | – | Discrete I/O | 20-pin 4 × 4 QFN |
| UCS1001-2 | USB Port Power Controller with Charger Emulation | 1 | 1 | 9 | Up to 2.4A | – | ✓ | – | – | Discrete I/O | 20-pin 4 × 4 QFN |
| UCS1001-3 | USB Port Power Controller with Charger Emulation | 1 | 1 | 9 | Up to 2.4A | ✓ | – | – | – | Discrete I/O | 20-pin 4 × 4 QFN |
| UCS1001-4 | USB Port Power Controller with Charger Emulation | 1 | 1 | 9 | Up to 2.4A | – | ✓ | – | – | Discrete I/O | 20-pin 4 × 4 QFN |
| UCS1002-1 | Programmable USB Port Power Controller with Charger Emulation | 1 | 1 | 9 + 1 programmable | Up to 2.4A | ✓ | – | ✓ | ✓ | I2C/SMBus | 20-pin 4 × 4 QFN |
| UCS1002-2 | Programmable USB Port Power Controller with Charger Emulation | 1 | 1 | 9 + 1 programmable | Up to 2.4A | ✓ | – | ✓ | ✓ | I²C/SMBus | 20-pin 4 × 4 QFN |
| UCS1003-1 | Programmable USB Port Power Controller with Charger Emulation | 1 | 1 | 9 + 1 programmable | Up to 3A | – | ✓ | ✓ | ✓ | I²C/SMBus | 20-pin 4 × 4 QFN |
| UCS1003-2 | Programmable USB Port Power Controller with Charger Emulation | 1 | 1 | 9 | Up to 3A | ✓ | – | – | – | Discrete I/O | 20-pin 4 × 4 QFN |
| UCS1003-3 | Programmable USB Port Power Controller with Charger Emulation | 1 | 1 | 9 | Up to 3A | – | ✓ | – | – | Discrete I/O | 20-pin 4 × 4 QFN |
| UCS81003 | Programmable USB Port Power Controller Automotive | 1 | 1 | 9 + 1 programmable | Up to 3A | – | ✓ | ✓ | ✓ | I²C/SMBus | 28-pin 5 × 5 QFN |

| Current Limit USB Protection Switches | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Part #** | **Channels** | **$V_{IN}$ Range (V)** | **Fixed Current Limit (Min.)** | **Adj. Current Limit (Max.)** | **$R_{DS(ON)}$ (mΩ)** | **Current Limited/ Latched** | **Reverse Blocking** | **Enable Logic** | **ULVO** | **Thermal Protection** | **Fault Flag** | **Current Measurement** | **Packages** |
| UCS2114 | Dual | 2.9–5.5 | 3.0A | 3.4A | 18 | ✓ | ✓ | Active Low, Active High | ✓ | ✓ | ✓ | ✓ | 20-pin 3 × 3 QFN |
| UCS2113 | Dual | 2.9–5.5 | 3.0A | 3.4A | 40 | ✓ | ✓ | Active Low, Active High | ✓ | ✓ | ✓ | ✓ | 20-pin 4 × 4 QFN |
| UCS2112 | Dual | 2.9–5.5 | 3.0A | 3.4A | 40 | ✓ | ✓ | Active Low, Active High | ✓ | ✓ | ✓ | ✓ | 20-pin 4 × 4 QFN |
| MIC2003/13 | Single | 2.5–5.5 | 500 mA, 800 mA, 1.2A | – | 70 | ✓ | – | – | ✓ | ✓ | – | – | 5-pin SOT23, 2 × 2 |
| MIC2004/14 | Single | 2.5–5.5 | 500 mA, 800 mA, 1.2A | – | 70 | ✓ | – | Active High | ✓ | ✓ | – | – | 5-pin SOT23, 2 × 2 |
| MIC2005/15 | Single | 2.5–5.5 | 500 mA, 800 mA, 1.2A | – | 70 | ✓ | – | Active High | ✓ | ✓ | ✓ | – | 5-pin SOT23, 6-pin SOT23, 2 × 2 |
| MIC2005A | Single | 2.5–5.5 | 500 mA | – | 170 | ✓ | – | Active Low, Active High | ✓ | ✓ | ✓ | – | 5-pin SOT23, 6-pin SOT23 |
| MIC2009A | Single | 2.5–5.5 | – | 900 mA | 170 | ✓ | – | Active Low, Active High | ✓ | ✓ | – | – | 6-pin SOT23 |
| MIC2005L | Single | 2.5–5.5 | 500 mA, 800 mA, 1.2A | – | 70 | ✓ | – | Active Low | ✓ | ✓ | ✓ | – | 5-pin SOT23 |
| MIC2007/17 | Single | 2.5–5.5 | – | 2.0A | 100 | ✓ | – | Active High | ✓ | ✓ | – | – | 6-pin SOT23, 2 × 2 |
| MIC2008/18 | Single | 2.5–5.5 | – | 2.0A | 70 | ✓ | – | Active High | ✓ | ✓ | – | – | 6-pin SOT23, 2 × 2 |
| MIC2009/19 | Single | 2.5–5.5 | – | 2.0A | 70 | ✓ | – | Active High | ✓ | ✓ | ✓ | – | 6-pin SOT23, 2 × 2 |
| MIC2025-1 | Single | 2.7–5.5 | 500 mA | – | 140 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 8-pin SOIC, 8-pin MSOP |
| MIC2025-2 | Single | 2.7–5.5 | 500 mA | – | 140 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 8-pin SOIC, 8-pin MSOP |
| MIC2026-1 | Dual | 2.7–5.5 | 500 mA | – | 90 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 8-pin SOIC, 8-pin PDIP |
| MIC2026-2 | Dual | 2.7–5.5 | 500 mA | – | 90 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 8-pin SOIC, 8-pin PDIP |

*Reduced Height Package

## POWER MANAGEMENT: Power Switches (Continued)

| Part # | Channels | $V_{IN}$ Range (V) | Fixed Current Limit (Min.) | Adj. Current Limit (Max.) | $R_{DS(ON)}$ (mΩ) | Current Limited/ Latched | Reverse Blocking | Enable Logic | ULVO | Thermal Protection | Fault Flag | Current Measurement | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Current Limit USB Protection Switches (Continued)** | | | | | | | | | | | | | |
| MIC2026A-1 | Dual | 2.7–5.5 | 500 mA | – | 100 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 8-pin SOIC |
| MIC2026A-2 | Dual | 2.7–5.5 | 500 mA | – | 100 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 8-pin SOIC |
| MIC2027-1 | Quad | 2.7–5.5 | 500 mA | – | 150 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 16-pin SOIC, 16-pin WSOIC |
| MIC2027-2 | Quad | 2.7–5.5 | 500 mA | – | 150 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 16-pin SOIC, 16-pin WSOIC |
| MIC2033 | Single | 2.5–5.5 | 475 mA, 517 mA, 760 mA, 950 mA, 1.14A | – | 125 | ✓ | – | Active Low, Active High | ✓ | ✓ | ✓ | – | 6-pin SOT-23, 6-pin DFN* |
| MIC2039 | Single | 2.5–5.5 | – | 2.5A | 75 | ✓ | – | Active Low, Active High | ✓ | ✓ | ✓ | – | 6-pin SOT-23, 2 × 2* |
| MIC2040-1 | Single | 0.8–5.5 | – | 1.5A | 75 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 10-pin MSOP |
| MIC2040-2 | Single | 0.8–5.5 | – | 1.5A | 75 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 10-pin MSOP |
| MIC2041-1 | Single | 0.8–5.5 | – | 1.5A | 75 | Latched | ✓ | Active High | ✓ | ✓ | ✓ | – | 10-pin MSOP |
| MIC2041-2 | Single | 0.8–5.5 | – | 1.5A | 75 | Latched | ✓ | Active Low | ✓ | ✓ | ✓ | – | 10-pin MSOP |
| MIC2042-1 | Single | 0.8–5.5 | – | 3.0A | 60 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 8-pin SOIC, 14-pin TSSOP |
| MIC2042-2 | Single | 0.8–5.5 | – | 3.0A | 60 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 8-pin SOIC, 14-pin TSSOP |
| MIC2043-1 | Single | 0.8–5.5 | – | 3.0A | 60 | Latched | ✓ | Active High | ✓ | ✓ | ✓ | – | 8-pin SOIC, 14-pin TSSOP |
| MIC2043-2 | Single | 0.8–5.5 | – | 3.0A | 60 | Latched | ✓ | Active Low | ✓ | ✓ | ✓ | – | 8-pin SOIC, 14-pin TSSOP |
| MIC2044-1 | Single | 0.8–5.5 | – | 6.0A | 30 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 16-pin TSSOP |
| MIC2044-2 | Single | 0.8–5.5 | – | 6.0A | 30 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 16-pin TSSOP |
| MIC2045-1 | Single | 0.8–5.5 | – | 6.0A | 30 | Latched | ✓ | Active High | ✓ | ✓ | ✓ | – | 16-pin TSSOP |
| MIC2045-2 | Single | 0.8–5.5 | – | 6.0A | 30 | Latched | ✓ | Active Low | ✓ | ✓ | ✓ | – | 16-pin TSSOP |
| MIC2075-1 | Single | 2.7–5.5 | 500 mA | – | 140 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 8-pin SOIC, 8-pin MSOP |
| MIC2075-2 | Single | 2.7–5.5 | 500 mA | – | 140 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 8-pin SOIC, 8-pin MSOP |
| MIC2076-1 | Dual | 2.7–5.5 | 500 mA | – | 90 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 8-pin SOIC, 8-pin PDIP |
| MIC2076-2 | Dual | 2.7–5.5 | 500 mA | – | 90 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 8-pin SOIC, 8-pin PDIP |
| MIC2076A-1 | Dual | 2.7–5.5 | 500 mA | – | 100 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 8-pin SOIC |
| MIC2076A-2 | Dual | 2.7–5.5 | 500 mA | – | 100 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 8-pin SOIC |
| MIC2077-1 | Quad | 2.7–5.5 | 500 mA | – | 150 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 16-pin SOIC, 16-pin WSOIC |
| MIC2077-2 | Quad | 2.7–5.5 | 500 mA | – | 150 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 16-pin SOIC, 16-pin WSOIC |
| MIC2095-1 | Single | 2.5–5.5 | 500 mA | – | 170 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 16-pin 1.6 × 1.6 TMLF |
| MIC2095-2 | Single | 2.5–5.5 | 500 mA | – | 170 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 16-pin 1.6 × 1.6 TMLF |
| MIC2097-1 | Single | 2.5–5.5 | – | 1.1A | 170 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 16-pin 1.6 × 1.6 TMLF |
| MIC2097-2 | Single | 2.5–5.5 | – | 1.1A | 170 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 16-pin 1.6 × 1.6 TMLF |
| MIC2098-1 | Single | 2.5–5.5 | 900 mA | – | 170 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 16-pin 1.6 × 1.6 TMLF |
| MIC2098-2 | Single | 2.5–5.5 | 900 mA | – | 170 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 16-pin 1.6 × 1.6 TMLF |
| MIC2099-1 | Single | 2.5–5.5 | – | 1.1A | 170 | ✓ | ✓ | Active High | ✓ | ✓ | ✓ | – | 16-pin 1.6 × 1.6 TMLF |
| MIC2099-2 | Single | 2.5–5.5 | – | 1.1A | 170 | ✓ | ✓ | Active Low | ✓ | ✓ | ✓ | – | 16-pin 1.6 × 1.6 TMLF |
| MIC2505 | Single | 2.7–7.5 | 2.0A | – | 30 | ✓ | ✓ | Active High | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin PDIP |
| MIC2505-1 | Single | 2.7–7.5 | 2.0A | – | 30 | ✓ | ✓ | Active High | – | ✓ | ✓ | – | 8-pin SOIC |
| MIC2505-2 | Single | 2.7–7.5 | 2.0A | – | 30 | ✓ | ✓ | Active Low | – | ✓ | ✓ | – | 8-pin SOIC |

*Reduced Height Package

## POWER MANAGEMENT: Power Switches (Continued)

| Part # | Channels | $V_{IN}$ Range (V) | Fixed Current Limit (Min.) | Adj. Current Limit (Max.) | $R_{DS(ON)}$ (mΩ) | Current Limited/ Latched | Reverse Blocking | Enable Logic | ULVO | Thermal Protection | Fault Flag | Current Measurement | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Current Limit USB Protection Switches (Continued)** | | | | | | | | | | | | | |
| MIC2506 | Dual | 2.7–7.5 | 1.0A | – | 75 | ✓ | ✓ | Active High | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin PDIP |
| MIC2544-1 | Single | 2.7–5.5 | – | 1.5A | 80 | ✓ | ✓ | Active High | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin MSOP |
| MIC2544-2 | Single | 2.7–5.5 | – | 1.5A | 80 | ✓ | ✓ | Active Low | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin MSOP |
| MIC2544A-1 | Single | 2.7–5.5 | – | 1.5A | 80 | ✓ | ✓ | Active High | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin MSOP |
| MIC2544A-2 | Single | 2.7–5.5 | – | 1.5A | 80 | ✓ | ✓ | Active Low | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin MSOP |
| MIC2545A-1 | Single | 2.7–5.5 | – | 3.0A | 35 | ✓ | ✓ | Active High | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin PDIP, 14-pin TSSOP |
| MIC2545A-2 | Single | 2.7–5.5 | – | 3.0A | 35 | ✓ | ✓ | Active Low | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin PDIP, 14-pin TSSOP |
| MIC2546-1 | Dual | 2.7–5.5 | – | 1.5A | 80 | ✓ | ✓ | Active High | – | ✓ | ✓ | – | 16-pin SOIC, 16-pin TSSOP |
| MIC2546-2 | Dual | 2.7–5.5 | – | 1.5A | 80 | ✓ | ✓ | Active Low | – | ✓ | ✓ | – | 16-pin SOIC, 16-pin TSSOP |
| MIC2547-1 | Dual | 2.7–5.5 | – | 1.5A | 80 | ✓ | ✓ | Active High | – | ✓ | ✓ | – | 16-pin SOIC, 16-pin TSSOP |
| MIC2547-2 | Dual | 2.7–5.5 | – | 1.5A | 80 | ✓ | ✓ | Active Low | – | ✓ | ✓ | – | 16-pin SOIC, 16-pin TSSOP |
| MIC2548-1 | Single | 2.7–5.5 | – | 1.5A | 80 | ✓ | ✓ | Active High | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin MSOP |
| MIC2548-2 | Single | 2.7–5.5 | – | 1.5A | 80 | ✓ | ✓ | Active Low | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin MSOP |
| MIC2548A-1 | Single | 2.7–5.5 | – | 1.5A | 80 | ✓ | ✓ | Active High | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin MSOP |
| MIC2548A-2 | Single | 2.7–5.5 | – | 1.5A | 80 | ✓ | ✓ | Active Low | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin MSOP |
| MIC2549A-1 | Single | 2.7–5.5 | – | 3.0A | 35 | ✓ | ✓ | Active High | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin PDIP, 14-pin TSSOP |
| MIC2549A-2 | Single | 2.7–5.5 | – | 3.0A | 35 | ✓ | ✓ | Active Low | – | ✓ | ✓ | – | 8-pin SOIC, 8-pin PDIP, 14-pin TSSOP |

*Reduced Height Package

## Load Switches

| Part # | Channels | $V_{IN}$ Range (V) | Max. Switch Current | $R_{DS(ON)}$ (mΩ) | Soft Start (µs) | Load Discharge (Ω) | Enable Logic | Input Pull-Up Resistor | Reverse Blocking | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MIC94030 | Single | 2.7–13.5 | 1.0 | 750 | – | – | Active Low | – | ✓ | 4-pin SOT143 |
| MIC94040 | Single | 1.7–5.5 | 3.0 | 28 | – | – | Active High | – | – | 4-pin 1.2 × 1.2 MLF |
| MIC94041 | Single | 1.7–5.5 | 3.0 | 28 | – | 250 | Active High | – | – | 4-pin 1.2 × 1.2 MLF |
| MIC94042 | Single | 1.7–5.5 | 3.0 | 28 | 100 | – | Active High | – | – | 4-pin 1.2 × 1.2 MLF |
| MIC94043 | Single | 1.7–5.5 | 3.0 | 28 | – | 250 | Active High | – | – | 4-pin 1.2 × 1.2 MLF |
| MIC94044 | Single | 1.7–5.5 | 3.0 | 28 | 900 | – | Active High | – | – | 4-pin 1.2 × 1.2 MLF |
| MIC94045 | Single | 1.7–5.5 | 3.0 | 28 | 900 | 200 | Active High | – | – | 4-pin 1.2 × 1.2 MLF |
| MIC94050 | Single | 1.8–5.5 | 1.8 | 125 | – | – | Active Low | – | ✓ | 4-pin SOT143 |
| MIC94051 | Single | 1.8–5.5 | 1.8 | 125 | – | – | Active Low | ✓ | ✓ | 4-pin SOT143 |
| MIC94052 | Single | 1.8–5.5 | 2.0 | 70 | – | – | Active Low | – | – | 6-pin SC70 |
| MIC94053 | Single | 1.8–5.5 | 2.0 | 70 | – | – | Active Low | ✓ | – | 6-pin SC70 |
| MIC94060 | Single | 1.7–5.5 | 2.0 | 77 | – | – | Active High | – | – | 6-pin SC70, 1.2 × 1.6 |
| MIC94061 | Single | 1.7–5.5 | 2.0 | 77 | – | 200 | Active High | – | – | 6-pin SC70, 1.2 × 1.6 |
| MIC94062 | Single | 1.7–5.5 | 2.0 | 77 | 800 | – | Active High | – | – | 6-pin SC70, 1.2 × 1.6 |

*Reduced Height Package

| POWER MANAGEMENT: Power Switches (Continued) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Part #** | **Channels** | **$V_{IN}$ Range (V)** | **Max. Switch Current** | **$R_{DS(ON)}$ (mΩ)** | **Soft Start (µs)** | **Load Discharge (Ω)** | **Enable Logic** | **Input Pull-Up Resistor** | **Reverse Blocking** | **Packages** |
| Load Switches (Continued) | | | | | | | | | | |
| MIC94063 | Single | 1.7–5.5 | 2.0 | 77 | 800 | 200 | Active High | – | – | 6-pin SC70, 1.2 × 1.6 |
| MIC94064 | Single | 1.7–5.5 | 2.0 | 77 | 115 | – | Active High | – | – | 6-pin SC70, 1.2 × 1.6 |
| MIC94065 | Single | 1.7–5.5 | 2.0 | 77 | 115 | 200 | Active High | – | – | 6-pin SC70, 1.2 × 1.6 |
| MIC94070 | Single | 1.7–5.5 | 1.2 | 120 | – | – | Active High | – | – | 6-pin SC70, 1.2 × 1.6 |
| MIC94071 | Single | 1.7–5.5 | 1.2 | 120 | – | 200 | Active High | – | – | 6-pin SC70, 1.2 × 1.6 |
| MIC94072 | Single | 1.7–5.5 | 1.2 | 120 | 800 | – | Active High | – | – | 6-pin SC70, 1.2 × 1.6 |
| MIC94073 | Single | 1.7–5.5 | 1.2 | 120 | 800 | 200 | Active High | – | – | 6-pin SC70, 1.2 × 1.6 |
| MIC94080 | Single | 1.7–5.5 | 2.0 | 67 | – | – | Active High | – | – | 4-pin 0.85 × 0.85 TMLF |
| MIC94081 | Single | 1.7–5.5 | 2.0 | 67 | – | 250 | Active High | – | – | 4-pin 0.85 × 0.85 TMLF |
| MIC94082 | Single | 1.7–5.5 | 2.0 | 67 | 800 | – | Active High | – | – | 4-pin 0.85 × 0.85 TMLF |
| MIC94083 | Single | 1.7–5.5 | 2.0 | 67 | 800 | 250 | Active High | – | – | 4-pin 0.85 × 0.85 TMLF |
| MIC94084 | Single | 1.7–5.5 | 2.0 | 67 | 120 | – | Active High | – | – | 4-pin 0.85 × 0.85 TMLF |
| MIC94085 | Single | 1.7–5.5 | 2.0 | 67 | 120 | 250 | Active High | – | – | 4-pin 0.85 × 0.85 TMLF |
| MIC94090 | Single | 1.7–5.5 | 1.2 | 130 | – | – | Active High | – | – | 6-pin SC70, 1.2 × 1.2 |
| MIC94091 | Single | 1.7–5.5 | 1.2 | 130 | – | 250 | Active High | – | – | 6-pin SC70, 1.2 × 1.2 |
| MIC94092 | Single | 1.7–5.5 | 1.2 | 130 | 790 | – | Active High | – | – | 6-pin SC70, 1.2 × 1.2 |
| MIC94093 | Single | 1.7–5.5 | 1.2 | 130 | 790 | 250 | Active High | – | – | 6-pin SC70, 1.2 × 1.2 |
| MIC94094 | Single | 1.7–5.5 | 1.2 | 130 | 120 | – | Active High | – | – | 6-pin SC70, 1.2 × 1.2 |
| MIC94095 | Single | 1.7–5.5 | 1.2 | 130 | 120 | 250 | Active High | – | – | 6-pin SC70, 1.2 × 1.2 |
| MIC94161 | Single | 1.7–5.5 | 3.0 | 15.5 | 2700 | – | Active High | – | ✓ | 1.5 × 1 WLCSP |
| MIC94162 | Single | 1.7–5.5 | 3.0 | 15.5 | 60 | 200 | Active High | – | ✓ | 1.5 × 1 WLCSP |
| MIC94163 | Single | 1.7–5.5 | 3.0 | 15.5 | 60 | – | Active High | – | ✓ | 1.5 × 1 WLCSP |
| MIC94164 | Single | 1.7–5.5 | 3.0 | 15.5 | 2700 | 200 | Active High | – | ✓ | 1.5 × 1 WLCSP |
| MIC94165 | Single | 1.7–5.5 | 3.0 | 15.5 | 2700 | – | Active High | – | ✓ | 1.5 × 1 WLCSP |
| MIC95410 | Single | 0.5–5.5 | 7.0 | 6.6 | 1100 | 2300 | Active High | – | – | 10-pin 1.2 × 2.0 QFN |
| MIC94066 | Dual | 1.7–5.5 | 2 | 85 | – | – | Active High | – | – | 8-pin 2 × 2 MLF |
| MIC94067 | Dual | 1.7–5.5 | 2 | 85 | – | 200 | Active High | – | – | 8-pin 2 × 2 MLF |
| MIC94068 | Dual | 1.7–5.5 | 2 | 85 | 800 | – | Active High | – | – | 8-pin 2 × 2 MLF |
| MIC94069 | Dual | 1.7–5.5 | 2 | 85 | 800 | 200 | Active High | – | – | 8-pin 2 × 2 MLF |

*Reduced Height Package

# DISPLAY AND LED DRIVERS

## DISPLAY AND LED DRIVERS: Electroluminescent Backlight Drivers

| Part # | Type | Input Voltage Low (V) | Input Voltage High (V) | Nominal Output Voltage (V) | Max. Switch Resistance (Ω) | Output Regulation | Max. Lamp Size per Device (in²) | Packages |
|---|---|---|---|---|---|---|---|---|
| **16-Segment Drivers** | | | | | | | | |
| HV509 | 16-Segment Drivers | 2 | 5.5 | ±50 to ±200 | – | – | 6.5 | 32-pin VQFN |
| HV528 | 16-Segment Drivers | 1.7 | 5.5 | ±50 to ±200 | – | – | 6.5 | 32-pin VQFN |
| **Offline Drivers** | | | | | | | | |
| HV809 | Offline Driver | 50 | 200 | ±50 to ±200 | – | – | 100 | 8-pin SOIC, 8-pin SOIC 150 mil |
| **Single Lamp Drivers** | | | | | | | | |
| HV816 | Single Lamp Driver | 2.7 | 5.5 | ±180 | – | Yes | 42 | 16-pin QFN |
| HV823 | Single Lamp Driver | 2 | 9.5 | ±90 | 6 | Yes | 23 | 8-pin SOIC 150 mil |
| HV825 | Single Lamp Driver | 1 | 1.6 | ±56 | 15 | No | 3 | 8-pin MSOP, 8-pin SOIC 150 mil |
| HV830 | Single Lamp Driver | 2 | 9.5 | ±100 | 4 | Yes | 25 | 8-pin SOIC 150 mil |
| HV833 | Single Lamp Driver | 1.8 | 6.5 | ±90 | 4 | Yes | 12 | 8-pin MSOP |
| HV850 | Single Inductorless Lamp Driver | 3 | 4.2 | ±70 | – | Yes | 1.5 | 8-pin MSOP |
| HV852 | Single Inductorless Lamp Driver | 2.4 | 5 | ±80 | – | Yes | 1.5 | 10-pin WDFN, 8-pin MSOP |
| HV853 | Single Inductorless Lamp Driver | 3.2 | 5 | ±80 | – | Yes | 1.5 | 10-pin WDFN, 8-pin MSOP |
| HV857 | Single Lamp Driver | 1.8 | 5 | ±95 | 6 | Yes | 5 | 8-pin WDFN, 8-pin MSOP |
| HV857L | Single Lamp Driver | 1.8 | 5 | ±95 | 6 | Yes | 5 | 8-pin WDFN, 8-pin MSOP |
| HV859 | Single Lamp Driver | 1.8 | 5 | ±105 | 6 | Yes | 5 | 8-pin WDFN, 8-pin MSOP |
| HV860 | Single Lamp Driver | 2.5 | 4.5 | ±110 | 6 | Yes | 5 | 12-pin WQFN |
| MIC4826 | Single Lamp Driver | 1.8 | 5.5 | ±80 | 7 | Yes | 3 | 8-pin MSOP |
| MIC4827 | Single Lamp Driver | 1.8 | 5.5 | ±90 | 7 | Yes | 3 | 8-pin MSOP |
| MIC4830 | Single Lamp Driver | 1.8 | 5.5 | ±90 | 7 | Yes | 4 | 8-pin MSOP, 8-pin VDFN |
| MIC4832 | Single Lamp Driver | 1.8 | 5.5 | ±110 | 7 | Yes | 3 | 8-pin MSOP, 8-pin VDFN |
| **Dual Lamp Drivers** | | | | | | | | |
| HV861 | Dual Lamp Drivers | 2.5 | 4.5 | ±90 | 7 | Yes | 5 | 16-pin WQFN |
| MIC4833 | Dual Lamp Drivers | 2.3 | 5.8 | ±110 | 12 | Yes | 4 | 12-pin VDFN |

## DISPLAY AND LED DRIVERS: LED Drivers

| Part # | Application | Topology | Input Voltage (V) | Ouput Current | Dimming | Packages |
|---|---|---|---|---|---|---|
| **Automotive (AEC-Q100 Certified) LED Drivers** | | | | | | |
| AT9917 | Auto | Boost, Sepic | 5.3–40 | External FET | PWM/Linear | 24- pin TSSOP |
| AT9919 | Auto | Buck | 4.5–40 | External FET | PWM | 8-pin DFN |
| AT9932 | Auto | Boost-Buck (Ćuk) | 5.3–40 | External FET | PWM/Linear | 24-pin TSSOP |
| AT9933 | Auto | Boost-Buck (Ćuk) | 9.0–75 | External FET | PWM | 8-pin SOIC |
| MAQ3203 | Auto | Buck | 4.5-42 | External FET | PWM | 8-pin SOIC |

| General Purpose LED Drivers | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Part #** | **Topology** | **Input Voltage (V)** | **Dimming** | **$I_O$ Typ. (mA)** | **Switching Frequency (Hz)** | **Switching MOSFET** | **Dithered** | **ILED Accuracy** | **$V_{FB}$ (V)** | **Packages** |
| HV9801A | Buck | 15–450 | 4-Level Switch | 1.0 | 100K | External FET | – | N/A | 0.25 | 16-pin SOIC 150 mil, 8-pin SOIC 150 mil |
| HV9803B | Buck | 7–13.2 | PWM/Linear | 1.5 | 100K | External FET | – | ±2% | 0.28 | 8-pin SOIC 150 mil |
| HV9805 | 2-Stage | 102–265 | – | 2.5 | 370K | 0.7A FET | – | N/A | 1.25 | 10-pin MSOP |
| HV98100 | Buck-Boost | 9.5–17.5 | – | 0.2 | 320K | External FET | – | ±5% | 0.2 | 6-pin SOT-23 |
| HV98101 | Buck-Boost | 9.5–17.5 | – | 0.2 | 320K | External FET | – | ±5% | 0.2 | 6-pin SOT-23 |
| HV9861A | Buck | 15–450 | PWM/Linear | 1.5 | 100K | External FET | – | ±3% | 0.27 | 16-pin SOIC 150 mil, 8-pin SOIC 150 mil |
| HV9910B | Buck | 8–450 | PWM/Linear | 1.0 | 100K | External FET | – | ±5% | 0.25 | 16-pin SOIC 150 mil, 8-pin SOIC 150 mil |

## DISPLAY AND LED DRIVERS: LED Drivers (Continued)

| Part # | Topology | Input Voltage (V) | Dimming | $I_Q$ Typ. (mA) | Switching Frequency (Hz) | Switching MOSFET | Dithered | ILED Accuracy | $V_{FB}$ (V) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Purpose LED Drivers (Continued)** | | | | | | | | | | |
| HV9910C | Buck | 15–450 | PWM/Linear | 1.0 | 100K | External FET | – | ±5% | 0.25 | 16-pin SOIC 150 mil, 8-pin SOIC 150 mil |
| HV9918 | Buck | 4.5–40 | PWM | 1.5 | 2M | 0.7A FET | – | ±5% | 0.23 | 8-pin WDFN |
| HV9919B | Buck | 4.5–40 | PWM | 1.5 | 2M | External FET | – | ±5% | 0.23 | 8-pin WDFN |
| HV9921 | Buck | 20–400 | – | 0.2 | 100K | 20 mA | – | N/A | N/A | 3-pin TO-92, 3-pin SOT-89 |
| HV9922 | Buck | 20–400 | – | 0.2 | 100K | 50 mA | – | N/A | N/A | 3-pin TO-92, 3-pin SOT-89 |
| HV9923 | Buck | 20–400 | – | 0.2 | 100K | 30 mA | – | N/A | N/A | 3-pin TO-92, 3-pin SOT-89 |
| HV9925 | Buck | 20–400 | PWM | 0.3 | 100K | 20–50 mA | – | N/A | 0.47 | 8-pin SOIC |
| HV9930 | Ćuk | 8–200 | PWM | 1.0 | Variable | External FET | – | N/A | 0.12 | 8-pin SOIC 150 mil |
| HV9931 | Buck | 8–450 | PWM | 1.0 | 100K | External FET | – | N/A | 7.5 | 8-pin SOIC 150 mil |
| MIC3201 | Buck | 6–20 | PWM | 1.2 | Hyst to 1.0M | 1A FET | – | ±5% | 2 | 8-pin SOIC |
| MIC3202 | Buck | 6–37 | PWM | 1.2 | Hyst to 1.0M | 1A FET | ✓ | ±5% | 2 | 8-pin SOIC |
| MIC3202-1 | Buck | 6–37 | PWM | 1.2 | Hyst to 1.0M | 1A FET | – | ±5% | 2 | 8-pin SOIC |
| MIC3203 | Buck | 4.5–42 | PWM | 1.0 | Hyst to 1.5M | External FET | ✓ | ±5% | 2 | 8-pin SOIC |
| MIC3203-1 | Buck | 4.5–42 | PWM | 1.0 | Hyst to 1.5M | External FET | – | ±5% | 2 | Please call for package information |
| MIC3205 | Buck | 4.5–40 | PWM | 1.3 | Hyst to 1M | External FET | – | ±5% | 2 | 10-pin VDFN |
| MIC3230 | Boost | 6–45 | PWM | 3.2 | 100K–1.0M | External FET | – | ±3% | 0.25 | 16-pin TSSOP, 12-pin VDFN |
| MIC3231 | Boost | 6–45 | PWM | 3.2 | 100K–1.0M | External FET | ✓ | ±3% | 0.25 | 16-pin TSSOP, 12-pin VDFN |
| MIC3232 | Boost | 6–45 | PWM | 3.2 | 400K | External FET | – | ±3% | 0.25 | 10-pin MSOP |

### Backlight LED Drivers

| Part # | Topology | Input Voltage (V) | Dimming | $I_Q$ Typ. (mA) | Output Current | Int. Diode | $V_{FB}$ (V) | Frequency | Packages |
|---|---|---|---|---|---|---|---|---|---|
| HV9803 | Buck | 7–13.2 | PWM/Linear | 1.5 | External FET | N/A | 0.8 | 100K | 8-pin SOIC 150 mil |
| HV9911 | Boost, SEPIC, Buck-Boost | 9–250 | PWM /Linear | N/A | External FET | N/A | 0.45 | 100K | 16-pin SOIC 150 mil |
| HV9912 | Boost, SEPIC, Buck-Boost | 9–100 | PWM /Linear | N/A | External FET | N/A | 0.45 | 100K | 16-pin SOIC 150 mil |
| HV9961 | Buck | 8–450 | PWM/Linear | 3.5 | External FET | N/A | 0.27 | 100K | 8-pin SOIC 150 mil, 16-pin SOIC 150mil |
| HV9963 | Boost, SEPIC, Buck-Boost | 8–40 | PWM/Linear | N/A | External FET | N/A | N/A | 100K | 16-pin SOIC 150 mil |
| HV9967B | Buck | 8–60 | PWM/Linear | N/A | 1A FET | N/A | 0.24 | 100K | 8-pin MSOP, 8-pin WDFN |
| HV9980 | Buck | 100–160 | PWM/Linear | 3.0 | 0.07A FET | N/A | N/A | 500K | 24-pin SOIC 300 mil |
| HV9985 | Boost, SEPIC, Buck | 10–40 | PWM/Linear | 1.5 | External FET | N/A | N/A | 500K | 40-pin VQFN |
| MIC2282 | Boost | 0.9–15 | N/A | 0.12 | 1A BJT | N/A | 0.22 | 20K | 8-pin MSOP |
| MIC2287 | Boost | 2.5–10 | PWM/Analog | 2.5 | 2A BJT | N/A | 0.095 | 1.2M | 5-pin TSOT, 8-pin VDFN |
| MIC2287C | Boost | 2.5–10 | PWM/Analog | 2.5 | 2A BJT | N/A | 0.095 | 1.2M | 5-pin TSOT, 8-pin VDFN |
| MIC2289 | Boost | 2.5–10 | PWM/Analog | 2.5 | 2A BJT | Yes | 0.095 | 1.2M | 6-pin TSOT, 8-pin VDFN |
| MIC2289C | Boost | 2.5–10 | PWM/Analog | 2.5 | 2A BJT | Yes | 0.095 | 1.2M | 6-pin TSOT |
| MIC2291 | Boost | 2.5–10 | PWM/Analog | 2.8 | 2A BJT | N/A | 0.095 | 1.2M | 5-pin TSOT, 8-pin VDFN |
| MIC2292 | Boost | 2.5–10 | PWM/Analog | 2.5 | 2A BJT | Yes | 0.095 | 1.6M | 8-pin VDFN |
| MIC2292C | Boost | 2.5–10 | PWM/Analog | 2.5 | 2A BJT | Yes | 0.095 | 1.6M | 8-pin VDFN |
| MIC2293 | Boost | 2.5–10 | PWM/Analog | 2.5 | 2A BJT | Yes | 0.095 | 2.0M | 8-pin VDFN |
| MIC2293C | Boost | 2.5–10 | PWM/Analog | 2.5 | 2A BJT | Yes | 0.095 | 2.0M | 8-pin VDFN |
| MIC2297 | Boost | 2.5–10 | PWM/Analog | 4 | 3A BJT | N/A | 0.2 | 600K | 10-pin VDFN |
| MIC2298 | Boost | 2.5–10 | PWM/Analog | 15 | 6A BJT | N/A | 0.2 | 1.0M | 12-pin VDFN |
| MIC2299 | Boost | 2.5–10 | PWM/Analog | 15 | 8A BJT | N/A | 0.2 | 2.0M | 12-pin VDFN |
| MIC3223 | Boost | 4.5–20 | PWM | 2.1 | 10A FET | N/A | 0.2 | 1.0M | 16-pin TSSOP |
| MIC3263 | Boost | 6–40 | PWM | 6.5 | 2A BJT | N/A | 2.36 | 400K–1.8M | 24-pin VQFN |
| MIC3287 | Boost | 2.8–6.5 | PWM/Analog | 2.1 | 1A BJT | N/A | 0.25 | 1.2M | 5-pin TSOT, 6-pin TSOT, 8-pin VDFN |
| MIC3289 | Boost | 2.5–6.5 | 1-Wire | 1.4 | 2A BJT | Yes | 0.25 | 1.2M | 6-pin TSOT, 8-pin VDFN |

## DISPLAY AND LED DRIVERS: LED Drivers (Continued)

| Part # | Input Voltage (V) | # of White LEDs | Dimming | $I_Q$ Typ. (mA) | V Dropout LED @ 20 mA | ILED Matching | Ext. LDOs | $V_{DROPOUT}$ | IQLDO | Comments | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Linear LED Drivers** | | | | | | | | | | | |
| MIC2841A | 3–5.5 | 4 @ 20 mA | PWM (200 Hz–500 kHz) | 1.4 | 40 mV | ±1.5% | – | – | – | DAM™ | 10-pin UDFN |
| MIC2842A | 3–5.5 | 4 @ 20 mA | 1-Wire, 48-Steps | 1.4 | 40 mV | ±1.5% | – | – | – | DAM | 10-pin UDFN |
| MIC2843A | 3–5.5 | 6 @ 20 mA | PWM (200 Hz–500 kHz) | 1.4 | 40 mV | ±1.5% | – | – | – | DAM | 10-pin UDFN |
| MIC2844A | 3–5.5 | 6 @ 20 mA | 1-Wire, 48-Steps | 1.4 | 40 mV | ±1.5% | – | – | – | DAM | 10-pin UDFN |
| MIC2846A | 3–5.5 | 6 @ 20 mA | 1-Wire, 48-Steps | 1.4 | 40 mV | ±1.5% | 2 | 150 | 35 | DAM | 14-pin VQFN |
| MIC2860-2D | 3–5.5 | 2 @ 30.2 mA | 1-Wire, 32-Steps | 0.7 | 52 mV | ±0.5% | – | – | – | | 6-pin SC70, 6-pin SOT-23 |
| MIC2860-2P | 3–5.5 | 2 @ 30.2 mA | PWM down to 250Hz | 0.7 | 52 mV | ±0.5% | – | – | – | | 6-pin SC70, 6-pin SOT-23 |
| MIC4811 | 3–5.5 | 6 @ 50 mA | PWM (200 Hz–500 kHz) | 1.7 | 100 mV @ 50 mA | ±1.0% | – | – | – | DAM | 10-pin MSOP |
| MIC4812 | 3–5.5 | 6 @ 100 mA | PWM (200 Hz–500 kHz) | 3.2 | 190 mV @ 100 mA | ±1.0% | – | – | – | DAM | 10-pin eMSOP |
| MIC4801 | 3–5.5 | 1 @ 600 mA | PWM (200 Hz–500 kHz) | 2.2 | 130 mV @ 400 mA | N/A | – | – | – | ±1% Accuracy | 8-pin SOIC |
| MIC4802 | 3–5.5 | 1 @ 800 mA | PWM (200 Hz–500 kHz) | 4.1 | 280 mV @ 800 mA | N/A | – | – | – | ±1% Accuracy | 8-pin eSOIC |

### Linear Regulators

| Part # | Input Voltage (V) | Output Voltage (V) | Output Current (mA) | Dimming | Parallelable | Packages | Features |
|---|---|---|---|---|---|---|---|
| CL2 | 5.0–90 | 5.0–90 | 20 | External FET | Yes | 3-pin TO-252, 3-pin TO-92, 3-pin SOT-89 | – |
| CL25 | 5.0–90 | 5.0–90 | 25 | External FET | Yes | 3-pin TO-92, 3-pin SOT-89 | – |
| CL220 | 5.0–220 | 5.0–220 | 20 | External FET | Yes | 3-pin TO-252, 3-pin TO-220 | – |
| CL320 | 6.5–90 | 4.0–90 | 20 | PWM | Yes | 8-bit SOIC with Heat Slug | OTP, separate ENABLE pin |
| CL325 | 6.5–90 | 4.0–90 | 25 | PWM | Yes | 8-bit SOIC with Heat Slug | OTP, separate ENABLE pin |
| CL330 | 6.5–90 | 4.0–90 | 30 | PWM | Yes | 8-bit SOIC with Heat Slug | OTP, separate ENABLE pin |
| CL520 | 4.75–90 | 1.0–90 | 20 | – | Yes | 3-pin TO-252, 3-pin TO-92 | – |
| CL525 | 4.75–90 | 1.0–90 | 25 | – | Yes | 3-pin TO-252, 3-pin TO-92 | – |
| CL6 | 6.5–90 | 4.0–90 | 100 | No | Yes | 3-pin TO-252, 3-pin TO-220 | Reverse polarity protection, OTP |
| CL7 | 6.5–90 | 4.0–90 | 100 | PWM | Yes | 8-pin SOIC with Heat Slug | Reverse polarity protection, OTP |

### Display LED Drivers

| Part # | Input Voltage (V) | Sink Current (mA) | Segments | LEDs | Description | Packages |
|---|---|---|---|---|---|---|
| MIC5400 | 4.75–5.5 | 30 | N/A | 2 banks of 8 | Driving Large LED Array in Signs | 28-pin SOIC |
| MM5450 | 4.75–11 | 15 | 34 | N/A | 7-Segment LED Driver with EN | 40-pin PDIP, 44-pin PLCC |
| MM5451 | 4.75–11 | 15 | 35 | N/A | 7-Segment LED Driver | 40-pin PDIP, 44-pin PLCC |

### Sequential Linear LED Drivers

| Part # | $V_{IN}$ (V) | $V_{OUT}$ (V) | Output Current (mA) | Dimming | Parallelable | Features | Packages |
|---|---|---|---|---|---|---|---|
| CL8800 | 90–275 | 70–350 | 115 | External Dimmer | Yes | 6-Stage | 33-pin QFN |
| CL8801 | 90–275 | 70–350 | 200 | External Dimmer | Yes | 4-Stage | 33-pin QFN |
| CL88020 | 90–135 | 70–190 | 115 | External Dimmer | Yes | 4-Tap | 8-pin SOIC EP |
| **CL88030** | **90** | **320** | **N/A** | **External** | **Yes** | **10-ld QFN (3mm x 3mm)** | **4-Tap, ALR, OTP, Iout FET Dependent** |
| **CL88031** | **90** | **320** | **N/A** | **External** | **Yes** | **10-ld QFN (3mm x 3mm)** | **6-Tap, ALR, OTP, Iout FET Dependent** |

### Camera Flash LED Drivers

| Part # | Input Voltage (V) | # of LED Channels | Max. LED Current (mA) | Standby Current (mA) | Switch Frequency (MHz) | Peak Efficiency (%) | Current Accuracy (%) | Interface | Packages |
|---|---|---|---|---|---|---|---|---|---|
| MIC2870 | 2.7–5 | 2 | 1500 | 0.90 | 2 | 94 | ±10 | $I^2C$ | 16-pin TQFN |
| MIC2871 | 2.7–5.5 | 1 | 1200 | 0.23 | 2 | 94 | ±5 | Single-Wire | 14-pin LDFN |
| MIC2873 | 2.7–5.5 | 1 | 1200 | 0.17 | 2 | 92 | ±8 | Single-Wire | 9-pin WLCSP |
| MIC2874 | 2.7–5.5 | 1 | 1200 | 0.17 | 4 | 92 | ±8 | Single-Wire | 9-pin WLCSP |

# HIGH-VOLTAGE INTERFACE

## HIGH-VOLTAGE INTERFACE: Driver Arrays

| Part # | Output Channels | $V_{OUT}$ Operating (V) Transient | $V_{OUT}$ Operating (V) Sustained | Input Structure | Description |
|---|---|---|---|---|---|
| **Sink** | | | | | |
| HV5122 | 32 | 250 | 225 | Serial | Serial to parallel converter with output enable and strobe |
| HV5222 | 32 | 250 | 225 | Serial | Serial to parallel converter with output enable and strobe |
| HV5522 | 32 | 230 | 220 | Serial | Serial to parallel converter with latches, polarity, and blanking |
| HV5523 | 32 | 230 | 220 | Serial | Serial to parallel converter with latches, polarity, and blanking |
| HV5530 | 32 | 315 | 300 | Serial | Serial to parallel converter with latches, polarity, and blanking |
| HV5622 | 32 | 230 | 220 | Serial | Serial to parallel converter with latches, polarity, and blanking |
| HV5623 | 32 | 250 | 220 | Serial | Serial to parallel converter with latches, polarity, and blanking |
| HV5630 | 32 | 315 | 300 | Serial | Serial to parallel converter with latches, polarity, and blanking |
| MIC5800 | 4 | 50 | 50 | Parallel | 4.4 MHz (min.) Data at 5V, Higher at 12V; TTL/CMOS/PMOS Logic; Integrated clamp diodes; CLR/Strobe/Enable Out |
| MIC5801 | 8 | 50 | 50 | Parallel | 4.4 MHz (min.) Data at 5V, Higher at 12V; TTL/CMOS/PMOS Logic; Integrated clamp diodes; CLR/Strobe/Enable Out |
| MIC5821 | 8 | 50 | 35 | Serial | Similar to MIC5801, Adds thermal Shutdown, UVLO, OCP |
| MIC5822 | 8 | 80 | 50 | Serial | 8-bit SRs (Cascadable), Operable with split supply (to –20V), 3.3 MHz (min.) Data at 5V, TTL/CMOS/PMOS/NMOS Logic |
| MIC5841 | 8 | 50 | 35 | Serial | 8-bit SRs (Cascadable), Operable with split supply (to –20V), 3.3 MHz (min.) Data at 5V, Higher at 12V, TTL/CMOS/PMOS/NMOS Logic |
| MIC5842 | 8 | 80 | 50 | Serial | 8-bit SRs (Cascadable), Operable with split supply (to –20V), 3.3 MHz (min.) Data at 5V, Higher at 12V, Low Power Logic: TTL/CMOS/PMOS/NMOS; Internal Pull Up/Down Res's |
| MIC58P01 | 8 | 80 | 80 | Parallel | 8-bit SRs (Cascadable), Operable w/Split Supply (to –20V), 3.3 MHz (min.) Data at 5V, Higher at 12V, Low Power Logic: TTL/CMOS/PMOS/NMOS; Internal Pull Up/Down Res's |
| MIC58P42 | 8 | 80 | 50 | Serial | Similar to MIC5842, adds thermal shutdown, UVLO, OCP |
| MIC59P50 | 8 | 80 | 80 | Parallel | Similar to MIC58P01, with added error flag output |
| MIC59P60 | 8 | 80 | 50 | Serial | Similar to MIC58P42, with added error flag output |
| **Source** | | | | | |
| HV57009 | 64 | 95 | 85 | Serial | Current controlled driver with latches and blanking, two 32-bit shift registers |
| MIC2981/82 | 8 | 50 | 35 | Parallel | 8-Ch. driver with parallel I/Os; TTL/CMOS/PMOS Logic; Integrated clamp diodes; $V_{IN}$<12V |
| MIC5891 | 8 | 50 | 35 | Serial | 8-bit SRs (Cascadable), Operable with split supply (to –20V), 5 MHz (min.) Data at 5V, Integrated clamp diodes; TTL/CMOS/PMOS/NMOS Logic; Strobe and output enable |
| **Source-Sink** | | | | | |
| HV3418 | 64 | 200 | 180 | Serial | Serial to parallel converter with latches, polarity, and blanking |
| HV507 | 64 | 320 | 300 | Serial | Serial to parallel converter with latches, polarity, and blanking |
| HV508 | 2 | 60 | 45 | Parallel | H-Bridge output with two output voltage level selections and polarity; Specially targeted as LCD shutter driver |
| HV513 | 8 | 275 | 250 | Serial | Serial to parallel converter with latches, polarity, and blanking HI-Z and short circuit detect |
| HV518 | 32 | 90 | 80 | Serial | Serial to parallel converter with latches, enable, and strobe; Specially targeted as vacuum-fluorescent display drive |
| HV5308 | 32 | 90 | 80 | Serial | Serial to parallel converter with latches, and output enable |
| HV5408 | 32 | 90 | 80 | Serial | Serial to parallel converter with latches, and output enable |
| HV574 | 80 | 90 | 80 | Serial | Serial to parallel converter with latches, polarity, and blanking |
| HV57708 | 64 | 90 | 80 | Serial | Polarity, and blanking with four 16-bit shift registers |
| HV57908 | 64 | 90 | 80 | Serial | Latches, blanking, polarity, and single shift register |
| HV5812 | 20 | 90 | 80 | Serial | Serial to parallel converter with latches, blanking and strobe |
| HV582 | 96 | 85 | 80 | Serial | 96-Channel, with high-voltage CMOS Outputs, 80V |
| HV583 | 128 | 90 | 80 | Serial | 128-Channel, with high-voltage CMOS Outputs, 80V |
| HV66 | 32 | 70 | 60 | Serial | Serial to parallel converter with latches, polarity and blanking |
| HV6810 | 10 | 90 | 80 | Serial | Serial to parallel converter with data latches and channel polarity select |
| HV7022 | 34 | 250 | 230 | Serial | Serial to parallel converter with direction, enable, and polary select; particularly useful for ACTFEL displays |
| HV7224 | 40 | 260 | 240 | Serial | Serial to parallel converter with latches, and output enable |
| HV7620 | 32 | 225 | 200 | Serial | Serial to parallel converter with latches, channel polarity select, and blanking |
| HV9308 | 32 | 90 | 80 | Serial | Serial to parallel converter latches and output enable, CW directional shift |
| HV9408 | 32 | 90 | 80 | Serial | Serial to parallel converter latches and output enable; CCW directional shift |
| HV9808 | 32 | 90 | 80 | Serial | Serial to parallel converter latches, polarity, and output enable; CCW directional shift |

## HIGH-VOLTAGE INTERFACE: Amplifiers and MEMS Drivers

| Part # | Output Channels | Slew Rate (V/µs) | Closed Loop Gain (V/V) | Feedback Resistance (MΩ) | Source Current (Max. µA) | Sink Current (Max. µA) | Output Capacitive Load (Max. pF) | Packages |
|---|---|---|---|---|---|---|---|---|
| HV254 | 32 | 3 | 50 | 12 | 300 | 300 | 100 | 100-pin MQFP |
| HV256 | 32 | 2 | 72 | 12 | 715 | 715 | 3000 | 100-pin MQFP |
| HV257 | 32 | 2 | 72 | 12 | 500 | 500 | 3000 | 100-pin MQFP |
| HV264 | 4 | 9 | 66.7 | 5.3 | 3000 | 3000 | 15 | 24-pin TSSOP |

## HIGH-VOLTAGE INTERFACE: MOSFETs – Interface

| Part # | $BV_{DSX}$ Min. (V) | $R_{DS(ON)}$ Max. (Ω) | $V_{GS(OFF)}$ Min. (V) | $V_{GS(OFF)}$ Max. (V) | Packages |
|---|---|---|---|---|---|
| **Depletion-Mode N-Channel** | | | | | |
| LND01 | 9 | 1.4 | –0.8 | –3 | 5-pin SOT-23 |
| DN1509 | 90 | 6 | –1.8 | –3.5 | 3-pin SOT-89, 5-pin SOT-23 |
| DN2625 | 250 | 3.5 | –1.5 | –2.1 | 8-pin VDFN, 3-pin DPAK |
| DN3525 | 250 | 6 | –1.5 | –3.5 | 3-pin SOT-89 |
| DN2530 | 300 | 12 | –1 | –3.5 | 3-pin TO-92, 3-pin SOT-89 |
| DN3535 | 350 | 10 | –1.5 | –3.5 | 3-pin SOT-89 |
| DN2535 | 350 | 25 | –1.5 | –3.5 | 3-pin TO-92, 3-pin TO-220 |
| DN3135 | 350 | 35 | –1.5 | –3.5 | 3-pin SOT-89, 3-pin SOT-23 |
| DN2540 | 400 | 25 | –1.5 | –3.5 | 3-pin TO-92, 3-pin SOT-89, 3-pin TO-220 |
| DN3545 | 450 | 20 | –1.5 | –3.5 | 3-pin TO-92, 3-pin SOT-89 |
| DN3145 | 450 | 60 | –1.5 | –3.5 | 3-pin SOT-89 |
| DN2450 | 500 | 10 | –1.5 | –3.5 | 3-pin DPAK, 3-pin SOT-89 |
| LND150 | 500 | 1000 | –1 | –3 | 3-pin TO-92, 3-pin SOT-89, 3-pin SOT-23 |
| LND250 | 500 | 1000 | –1 | –3 | 3-pin SOT-23 |
| DN3765 | 650 | 8 | –1.5 | –3.5 | 3-pin DPAK |
| DN2470 | 700 | 42 | –1.5 | –3.5 | 3-pin DPAK |

| Part # | $BV_{DSS}$ Min. (V) | $R_{DS(ON)}$ Max. (Ω) | $C_{ISS}$ Max. (pF) | $V_{GS(TH)}$ Max. (V) | Packages |
|---|---|---|---|---|---|
| **Enhancement-Mode N-Channel** | | | | | |
| TN2501 | 18 | 2.5 | 110 | 1.0 | 3-pin SOT-89 |
| TN0702 | 20 | 1.3 | 200 | 1.0 | 3-pin TO-92 |
| VN0300 | 30 | 1.2 | 190 | 2.5 | 3-pin TO-92 |
| TN0604 | 40 | 0.8 | 190 | 1.6 | 3-pin TO-92 |
| TN2504 | 40 | 1.0 | 125 | 1.6 | 3-pin SOT-89 |
| TN0104 | 40 | 2.0 | 70 | 1.6 | 3-pin TO-92, 3-pin SOT-89 |
| VN0104 | 40 | 3.0 | 65 | 2.4 | 3-pin TO-92 |
| VN3205 | 50 | 0.3 | 300 | 2.4 | 3-pin TO-92, 3-pin SOT-89 |
| TN0606 | 60 | 1.5 | 150 | 2.0 | 3-pin TO-92 |
| TN2106 | 60 | 2.5 | 50 | 2.0 | 3-pin TO-92, 3-pin SOT-23 |
| 2N6660 | 60 | 3.0 | 50 | 2.0 | 3-pin TO-39 |
| TN0106 | 60 | 3.0 | 60 | 2.0 | 3-pin TO-92 |
| VN0106 | 60 | 3.0 | 65 | 2.4 | 3-pin TO-92 |
| VN0606 | 60 | 3.0 | 50 | 2.0 | 3-pin TO-92 |
| VN2106 | 60 | 4.0 | 50 | 2.4 | 3-pin TO-92 |
| 2N7000 | 60 | 5.0 | 60 | 3.0 | 3-pin TO-92 |
| 2N7002 | 60 | 7.5 | 50 | 2.5 | 3-pin SOT-23 |
| 2N7008 | 60 | 7.5 | 50 | 2.5 | 3-pin TO-92 |
| VN2222L | 60 | 7.5 | 60 | 2.5 | 3-pin TO-92 |

| HIGH-VOLTAGE INTERFACE: MOSFETs – Interface (Continued) | | | | | |
|---|---|---|---|---|---|
| **Part #** | **$BV_{DSS}$ Min. (V)** | **$R_{DS(ON)}$ Max. (Ω)** | **$C_{ISS}$ Max. (pF)** | **$V_{GS(TH)}$ Max. (V)** | **Packages** |
| Enhancement-Mode N-Channel (Continued) | | | | | |
| VN0808 | 80 | 4.0 | 50 | 2.0 | 3-pin TO-92 |
| VN0109 | 90 | 3.0 | 65 | 2.4 | 3-pin TO-92 |
| 2N6661 | 90 | 4.0 | 50 | 2.0 | 3-pin TO-39 |
| VN2210 | 100 | 0.4 | 500 | 2.4 | 3-pin TO-92, 3-pin TO-39 |
| TN0610 | 100 | 1.5 | 150 | 2.0 | 3-pin TO-92 |
| TN2510 | 100 | 1.5 | 125 | 2.0 | 3-pin SOT-89 |
| TN0110 | 100 | 3.0 | 60 | 2.0 | 3-pin TO-92 |
| VN2110 | 100 | 4.0 | 50 | 2.4 | 3-pin SOT-23 |
| VN1206 | 120 | 6.0 | 125 | 2.0 | 3-pin TO-92 |
| TN0620 | 200 | 6.0 | 150 | 1.6 | 3-pin TO-92 |
| VN2224 | 240 | 1.3 | 350 | 3.0 | 3-pin TO-92 |
| TN2524 | 240 | 6.0 | 125 | 2.0 | 3-pin SOT-89 |
| VN2406 | 240 | 6.0 | 125 | 2.0 | 3-pin TO-92 |
| VN2410 | 240 | 10.0 | 125 | 2.0 | 3-pin TO-92 |
| TN2124 | 240 | 15.0 | 50 | 2.0 | 3-pin SOT-23 |
| TN2425 | 250 | 3.5 | 200 | 2.0 | 3-pin SOT-89 |
| TN5325 | 250 | 7.0 | 110 | 2.0 | 3-pin TO-92, 3-pin SOT-89, 3-pin SOT-23 |
| TN2130 | 300 | 25.0 | 50 | 2.4 | 3-pin SOT-23 |
| TN2435 | 350 | 6.0 | 200 | 0.8 (min) | 3-pin SOT-89 |
| TN5335 | 350 | 15.0 | 110 | 2.0 | 3-pin SOT-89, 3-pin SOT-23 |
| TN2640 | 400 | 5.0 | 225 | 2.0 | 3-pin DPAK, 3-pin TO-92, 8-pin SOIC 150 mil |
| TN2540 | 400 | 12.0 | 125 | 2.0 | 3-pin TO-92, 3-pin SOT-89 |
| VN4012 | 400 | 12.0 | 110 | 1.8 | 3-pin TO-92 |
| VN2450 | 500 | 13.0 | 150 | 4.0 | 3-pin TO-92, 3-pin SOT-89 |
| VN0550 | 500 | 60.0 | 55 | 4.0 | 3-pin TO-92 |
| VN2460 | 600 | 20.0 | 150 | 4.0 | 3-pin TO-92, 3-pin SOT-89 |
| Enhancement-Mode P-Channel | | | | | |
| LP0701 | –16.5 | 1.5 | 250 | –1.0 | 3-pin TO-92, 8-pin SOIC 150 mil |
| TP2502 | –20 | 2.0 | 125 | –2.4 | 3-pin SOT-89 |
| VP3203 | –30 | 0.6 | 300 | –3.5 | 3-pin TO-92, 3-pin SOT-89 |
| TP0604 | –40 | 2.0 | 150 | –2.4 | 3-pin TO-92 |
| TP2104 | –40 | 6.0 | 60 | –2.0 | 3-pin TO-92, 3-pin SOT-23 |
| VP0104 | –40 | 8.0 | 60 | –3.5 | 3-pin TO-92 |
| VP2206 | –60 | 0.9 | 450 | –3.5 | 3-pin TO-92, 3-pin TO-39 |
| VP0106 | –60 | 8.0 | 60 | –3.5 | 3-pin TO-92 |
| VP2106 | –60 | 12.0 | 60 | –3.5 | 3-pin TO-92 |
| VP0808 | –80 | 5.0 | 150 | –4.5 | 3-pin TO-92 |
| VP0109 | –90 | 8.0 | 60 | –3.5 | 3-pin TO-92 |
| TP2510 | –100 | 3.5 | 125 | –2.4 | 3-pin SOT-89 |
| VP2110 | –100 | 12.0 | 60 | –3.5 | 3-pin SOT-23 |
| TP0620 | –200 | 12.0 | 150 | –2.4 | 3-pin TO-92 |
| TP2520 | –200 | 12.0 | 125 | –2.0 | 3-pin SOT-89 |
| TP2522 | –220 | 12.0 | 125 | –2.4 | 3-pin SOT-89 |
| TP5322 | –220 | 12.0 | 110 | –2.4 | 3-pin SOT-89, 3-pin SOT-23 |
| TP2424 | –240 | 8.0 | 200 | –2.4 | 3-pin SOT-89 |
| TP2435 | –350 | 15.0 | 200 | –2.4 | 3-pin SOT-89 |

| HIGH-VOLTAGE INTERFACE: MOSFETs – Interface (Continued) | | | | | |
|---|---|---|---|---|---|
| **Part #** | **$BV_{DSS}$ Min. (V)** | **$R_{DS(ON)}$ Max. (Ω)** | **$C_{ISS}$ Typ. (pF)** | **$V_{GS(TH)}$ Max. (V)** | **Packages** |
| Enhancement-Mode P-Channel (Continued) | | | | | |
| TP2635 | –350 | 15.0 | 300 | –2.0 | 3-pin TO-92 |
| TP2535 | –350 | 25.0 | 125 | –2.4 | 3-pin TO-92 |
| TP5335 | –350 | 30.0 | 110 | –2.4 | 3-pin SOT-23 |
| TP2640 | –400 | 15.0 | 300 | –2.0 | 3-pin TO-92, 8-pin SOIC 150 mil |
| TP2540 | –400 | 25.0 | 125 | –2.4 | 3-pin TO-92, 3-pin SOT-89 |
| VP2450 | –500 | 30.0 | 190 | –3.5 | 3-pin TO-92, 3-pin SOT-89 |
| VP0550 | –500 | 125.0 | 70 | –4.5 | 3-pin TO-92 |
| TN2501 | 18 | 2.5 | 110 | 1.0 | 3-pin SOT-89 |
| TN0702 | 20 | 1.3 | 200 | 1.0 | 3-pin TO-92 |
| VN0300 | 30 | 1.2 | 190 | 2.5 | 3-pin TO-92 |
| TN0604 | 40 | 0.8 | 190 | 1.6 | 3-pin TO-92 |
| TN2504 | 40 | 1.0 | 125 | 1.6 | 3-pin SOT-89 |
| TN0104 | 40 | 2.0 | 70 | 1.6 | 3-pin TO-92, 3-pin SOT-89 |
| VN0104 | 40 | 3.0 | 65 | 2.4 | 3-pin TO-92 |
| VN3205 | 50 | 0.3 | 300 | 2.4 | 3-pin TO-92, 3-pin SOT-89 |
| TN0606 | 60 | 1.5 | 150 | 2.0 | 3-pin TO-92 |
| TN2106 | 60 | 2.5 | 50 | 2.0 | 3-pin TO-92, 3-pin SOT-23 |
| 2N6660 | 60 | 3.0 | 50 | 2.0 | 3-pin TO-39 |
| TN0106 | 60 | 3.0 | 60 | 2.0 | 3-pin TO-92 |
| VN0106 | 60 | 3.0 | 65 | 2.4 | 3-pin TO-92 |
| VN0606 | 60 | 3.0 | 50 | 2.0 | 3-pin TO-92 |
| VN2106 | 60 | 4.0 | 50 | 2.4 | 3-pin TO-92 |
| 2N7000 | 60 | 5.0 | 60 | 3.0 | 3-pin TO-92 |
| 2N7002 | 60 | 7.5 | 50 | 2.5 | 3-pin SOT-23 |
| 2N7008 | 60 | 7.5 | 50 | 2.5 | 3-pin TO-92 |
| VN2222L | 60 | 7.5 | 60 | 2.5 | 3-pin TO-92 |
| VN0808 | 80 | 4.0 | 50 | 2.0 | 3-pin TO-92 |
| VN0109 | 90 | 3.0 | 65 | 2.4 | 3-pin TO-92 |
| 2N6661 | 90 | 4.0 | 50 | 2.0 | 3-pin TO-39 |
| VN2210 | 100 | 0.4 | 500 | 2.4 | 3-pin TO-92, 3-pin TO-39 |
| N-Channel (Enhancement-Mode MOSFET Arrays) | | | | | |
| TD9944 | 240 | 6 | 65 | 2 | 8-pin SOIC |

| Complimentary (Enhancement-Mode MOSFET Arrays) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Part #** | **$BV_{DSS}$ N-Channel (V)** | **$BV_{DSS}$ P-Channel (V)** | **$R_{DS(ON)}$ N-Channel Max. (Ω)** | **$R_{DS(ON)}$ P-Channel Max. (Ω)** | **$V_{GS(TH)}$ Max. (V)** | **Details** | **Packages** |
| TC1550 | 500 | –500 | 60.0 | 125.0 | 4.0 | N- and P-Channel Pair | 8-pin SOIC |
| TC2320 | 200 | –200 | 7.0 | 12.0 | 2.0 | N- and P-Channel Pair | 8-pin SOIC |
| TC6215 | 150 | –150 | 4.0 | 7.0 | 2.0 | N- and P-Channel Pair | 8-pin SOIC |
| TC6320 | 200 | –200 | 7.0 | 8.0 | 2.0 | N- and P-Channel Pair | 8-pin SOIC, 8-lead VDFN (4 x 4 mm) |
| TC6321 | 200 | –200 | 7.0 | 8.0 | 2.0 | N- and P-Channel Pair | 8-lead VDFN (6 x 5 mm) |
| TC7920 | 200 | –200 | 7.0 | 8.0 | 2.0 | 2 N- and P-Channel Pairs | 12-pin VDFN |
| TC8020 | 200 | –200 | 8.0 | 9.5 | 3.0 | 6 N- and P-Channel Pairs | 56-pin VQFN |
| TC8220 | 200 | –200 | 5.3 | 6.5 | 2.0 | 2 N- and P-Channel Pairs | 12-pin VDFN |

| HIGH-VOLTAGE INTERFACE: Application Specific | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Part #** | **DC/DC** | **Input Voltage Min. (V)** | **Input Voltage Max. (V)** | **Output Voltage Min. ($V_{RMS}$)** | **Output Voltage Max. ($V_{RMS}$)** | **Load Min. (pF)** | **Load Max. (pF)** | **Packages** |
| Liquid Lens Driver | | | | | | | | |
| HV892 | Internal Charge Pump | 2.65 | 5.5 | 10 | 60 | 100 | 200 | 10-pin WDFN |

| Complimentary MOSFET Level Translator and Driver | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Part #** | **# of Channels** | **Input Voltage Low (V)** | **Input Voltage High (V)** | **Output Voltage Low (V)** | **Output Voltage High (V)** | **Input to Output Isolation (V)** | **Packages** |
| HT0440 | 2 | 3.15 | 5.5 | 6 | 10 | ±400 | 10-pin VDFN, 8-pin SOIC 150 mil |
| HT0740 | 1 | 3.15 | 5.5 | 4.5 | 8.5 | ±400 | 8-pin SOIC 150 mil |

| High-Side Current Monitor | | | | | | |
|---|---|---|---|---|---|---|
| **Part #** | **$V_{IN}$ (V)** | **Gain** | **Rise and Fall Time (µs)** | **$V_{SENSE}$ Max. (mV)** | **Quiescent Current Max. (µA)** | **Packages** |
| HV7800 | 8.0–450 | Fixed, 1 | 0.7–2.0 | 500 | 50 | 5-pin SOT-23 |
| HV7801 | 8.0–450 | Fixed, 5 | 0.7–2.0 | 500 | 50 | 5-pin SOT-23 |
| HV7802 | 8.0–450 | Adjustable | 0.7–1.4 | 500 | 50 | 8-pin MSOP |

| Fault Protection | | | | | |
|---|---|---|---|---|---|
| **Part #** | **Voltage (V)** | **# of Channels** | **Ron (Ω)** | **$V_{OFF}$ (V)** | **Packages** |
| FP0100 | 100 | 1 | 4.5 | 4.5 | 3-pin SOT-89 |

| Relay Driver and Controller | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Part #** | **$V_{IN}$ Min. (V)** | **$V_{IN}$ Max. (V)** | **$I_{IN}$ Max. (mA)** | **Oscillator Frequency Min. (kHz)** | **Oscillator Frequency Max. (kHz)** | **Oscillator Frequency $f_{SYNC}$ Min. (kHz)** | **Max Output Duty Cycle (%)** | **Typical Current Sense Pull-In (V)** | **Typical Current Sense Hold** | **External Adjustable Regulator Output Voltage (V)** | **External Adjustable Regulator Output Current (mA)** | **Packages** |
| HV9901 | 10 | 450 | 2 | 20 | 140 | 150 | 99.5 | 0.883 | Adjustable | 2.0–5.5 | 0–1.0 | 14-pin SOIC |

# LINEAR

| LINEAR: Op Amps | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Part #** | **# Per Package** | **GBWP** | **$I_Q$ Typical (µA)** | **$V_{OS}$ Max (mV)** | **Typical Input Bias Current (pA)** | **Input Voltage Noise Density (nV/rtHz)** | **Operating Voltage (V)** | **Temperature Range (°C)** | **Features** | **Packages** |
| MCP6441 | 1 | 9 kHz | 0.45 | 4.5 | 1 | 190(1) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 5-pin SOT-23(S), 5-pin SC-70(S) |
| MCP6442 | 2 | 9 kHz | 0.45 | 4.5 | 1 | 190(1) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 TDFN |
| MCP6444 | 4 | 9 kHz | 0.45 | 4.5 | 1 | 190(1) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |
| MCP6031 | 1 | 10 kHz | 0.9 | 0.15 | 1 | 165(1) | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN, 5-pin SOT-23 |
| MCP6032 | 2 | 10 kHz | 0.9 | 0.15 | 1 | 165(1) | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin MSOP |
| MCP6033 | 1 | 10 kHz | 0.9 | 0.15 | 1 | 165(1) | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Chip select | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN |
| MCP6034 | 4 | 10 kHz | 0.9 | 0.15 | 1 | 165(1) | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |
| MCP6041 | 1 | 14 kHz | 0.6 | 3 | 1 | 170(1) | 1.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 5-pin SOT-23(S) |
| MCP6042 | 2 | 14 kHz | 0.6 | 3 | 1 | 170(1) | 1.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6043 | 1 | 14 kHz | 0.6 | 3 | 1 | 170(1) | 1.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output, Chip select | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 6-pin SOT-23(S) |
| MCP6044 | 4 | 14 kHz | 0.6 | 3 | 1 | 170(1) | 1.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MIC7111 | 1 | 25 kHz | 20 | 7 | 1 | 110 | 1.8 to 11 | –40 to +85 | Rail-to-Rail Input/Output | 5-pin SOT-23 |

**Legend:** S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout
**Note 1:** Values are typical at 1 kHz **2:** Values are typical at 10 kHz

## LINEAR: Op Amps (Continued)

| Part # | # Per Package | GBWP | Io Typical (µA) | Vos Max (mV) | Typical Input Bias Current (pA) | Input Voltage Noise Density (nV/rtHz) | Operating Voltage (V) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP6421 | 1 | 90 kHz | 4.4 | 1 | 1 | 95(1) | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 5-pin SOT-23(S), 5-pin SC-70(S) |
| MCP6422 | 2 | 90 kHz | 4.4 | 1 | 1 | 95(1) | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 8-pin SOIC, 8-pin MSOP |
| MCP6424 | 4 | 90 kHz | 4.4 | 1 | 1 | 95(1) | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 14-pin SOIC, 14-pin TSSOP |
| MCP6141 | 1 | 100 kHz | 0.6 | 3 | 1 | 170(1) | 1.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output, G >10 stable | 5-pin SOT-23(S), 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6142 | 2 | 100 kHz | 0.6 | 3 | 1 | 170(1) | 1.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output, G >10 stable | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6143 | 1 | 100 kHz | 0.6 | 3 | 1 | 170(1) | 1.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output, G >10 stable, Chip select | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 6-pin SOT-23(S) |
| MCP6144 | 4 | 100 kHz | 0.6 | 3 | 1 | 170(1) | 1.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output, G >10 stable | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP606 | 1 | 155 kHz | 19 | 0.25 | 1 | 38(1) | 2.5 to 6.0 | –40 to +85 | Rail-to-Rail Output | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP, 5-pin SOT23(S) |
| MCP607 | 2 | 155 kHz | 19 | 0.25 | 1 | 38(1) | 2.5 to 6.0 | –40 to +85 | Rail-to-Rail Output | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP |
| MCP608 | 1 | 155 kHz | 19 | 0.25 | 1 | 38(1) | 2.5 to 6.0 | –40 to +85 | Rail-to-Rail Output, Chip select | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP |
| MCP609 | 4 | 155 kHz | 19 | 0.25 | 1 | 38(1) | 2.5 to 6.0 | –40 to +85 | Rail-to-Rail Output | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP616 | 1 | 190 kHz | 19 | 0.15 | 15000 | 32(1) | 2.3 to 5.5 | –40 to +85 | Rail-to-Rail Output, PNP input | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP617 | 2 | 190 kHz | 19 | 0.15 | 15000 | 32(1) | 2.3 to 5.5 | –40 to +85 | Rail-to-Rail Output, PNP input | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP618 | 1 | 190 kHz | 19 | 0.15 | 15000 | 32(1) | 2.3 to 5.5 | –40 to +85 | Rail-to-Rail Output, Chip select, PNP input | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP619 | 4 | 190 kHz | 19 | 0.15 | 15000 | 32(1) | 2.3 to 5.5 | –40 to +85 | Rail-to-Rail Output, PNP input | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP6231 | 1 | 300 kHz | 20 | 5 | 1 | 52(1) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 TDFN, 5-pin SC-70(U), 5-pin SOT-23(S, R, U) |
| MCP6232 | 2 | 300 kHz | 20 | 5 | 1 | 52(1) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 TDFN |
| MCP6234 | 4 | 300 kHz | 20 | 5 | 1 | 52(1) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP6051 | 1 | 385 kHz | 30 | 0.15 | 1 | 34(2) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin 2 × 3 DFN, 5-pin SOT-23(S) |
| MCP6052 | 2 | 385 kHz | 30 | 0.15 | 1 | 34(2) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin 2 × 3 DFN |
| MCP6054 | 4 | 385 kHz | 30 | 0.15 | 1 | 34(2) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |
| MIC861 | 1 | 400 kHz | 4.6 | 10 | 20 | – | 2.43 to 5.25 | –40 to +85 | Rail-to-Rail Output | 5-pin SC-70 |
| MIC863 | 2 | 450 kHz | 4.2 | 6.0 | 10 | – | 2.0 to 5.25 | –40 to +85 | Rail-to-Rail Output | 8-pin SOT-23 |
| LMC7101 | 1 | 500 kHz | 500 | 6 | 1 | 37 | 2.7 to 12 | –40 to +85 | Rail-to-Rail Input/Output | 5-pin SOT-23 |
| MIC7300 | 1 | 500 kHz | 1000 | 9 | 0.5 | 37 | 2.2 to 10 | –40 to +85 | Rail-to-Rail Input/Output, High Output Drive | 5-pin SOT-23, 8-pin MSOP |
| MCP6241 | 1 | 550 kHz | 50 | 5 | 1 | 45(1) | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 TDFN, 5-pin SC-70(U), 5-pin SOT-23(S ,R, U) |
| MCP6242 | 2 | 550 kHz | 50 | 5 | 1 | 45(1) | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6244 | 4 | 550 kHz | 50 | 5 | 1 | 45(1) | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP6061 | 1 | 730 kHz | 60 | 0.15 | 1 | 25(2) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin 2 × 3 DFN, 5-pin SOT-23(S) |
| MCP6062 | 2 | 730 kHz | 60 | 0.15 | 1 | 25(2) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin 2 × 3 DFN |
| MCP6064 | 4 | 730 kHz | 60 | 0.15 | 1 | 25(2) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |
| MIC7122 | 2 | 750 kHz | 800 | 9 | 1 | 37 | 2.2 to 15 | –40 to +85 | Rail-to-Rail Input/Output | 8-pin MSOP |
| MCP6001 | 1 | 1 MHz | 100 | 4.5 | 1 | 28(1) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 5-pin SOT-23(S, R, U), 5-pin SC-70(R) |
| MCP6002 | 2 | 1 MHz | 100 | 4.5 | 1 | 28(1) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN |
| MCP6004 | 4 | 1 MHz | 100 | 4.5 | 1 | 28(1) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP6401 | 1 | 1 MHz | 45 | 4.5 | 1 | 28(1) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 5-pin SOT-23(S, R, U), 5-pin SC-70(R) |
| MCP6402 | 2 | 1 MHz | 45 | 4.5 | 1 | 28(1) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| MCP6404 | 4 | 1 MHz | 45 | 4.5 | 1 | 28(1) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |
| MCP6411 | 1 | 1 MHz | 47 | 1 | 1 | 38(1) | 1.7 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 5-pin SOT-23(S), 5-pin SC-70(S) |
| MCP6L01 | 1 | 1 MHz | 85 | 5 | 2 | 24(2) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 5-pin SOT-23(S, R, U), 5-pin SC-70(S) |
| MCP6L02 | 2 | 1 MHz | 85 | 5 | 2 | 24(2) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin MSOP |
| MCP6L04 | 4 | 1 MHz | 85 | 5 | 2 | 24(2) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |

**Legend:** S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout
**Note 1:** Values are typical at 1 kHz **2:** Values are typical at 10 kHz

## LINEAR: Op Amps (Continued)

| Part # | # per Package | GBWP | Iq Typical (µA) | Vos Max (mV) | Typical Input Bias Current (pA) | Input Voltage Noise Density (nV/rtHz) | Operating Voltage (V) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP6071 | 1 | 1.2 MHz | 110 | 0.15 | 1 | 19(2) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin 2 × 3 DFN, 5-pin SOT-23(S) |
| MCP6072 | 2 | 1.2 MHz | 110 | 0.15 | 1 | 19(2) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin 2 × 3 DFN |
| MCP6074 | 4 | 1.2 MHz | 110 | 0.15 | 1 | 19(2) | 1.8 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |
| MCP6H01 | 1 | 1.2 MHz | 135 | 3.5 | 10 | 35(1) | Single Supply: 3.5 to 16<br>Dual Supply: ±1.75 to ±8 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC, 8-pin 2 × 3 TDFN, 5-pin SOT-23(S),<br>5-pin SC-70(S) |
| MCP6H02 | 2 | 1.2 MHz | 135 | 3.5 | 10 | 35(1) | Single Supply: 3.5 to 16<br>Dual Supply: ±1.75 to ±8 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| MCP6H04 | 4 | 1.2 MHz | 135 | 3.5 | 10 | 35(1) | Single Supply: 3.5 to 16<br>Dual Supply: ±1.75 to ±8 | –40 to +125 | Rail-to-Rail Output | 14-pin SOIC, 14-pin TSSOP |
| MCP6271 | 1 | 2 MHz | 170 | 3 | 1 | 20(1) | 2.0 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 5-pin SOT-23(S, R) |
| MCP6272 | 2 | 2 MHz | 170 | 3 | 1 | 20(1) | 2.0 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6273 | 1 | 2 MHz | 170 | 3 | 1 | 20(1) | 2.0 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output, Chip select | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 6-pin SOT-23(S) |
| MCP6274 | 4 | 2 MHz | 170 | 3 | 1 | 20(1) | 2.0 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP6275 | 2 | 2 MHz | 150 | 3 | 1 | 20(1) | 2.0 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output,<br>Dual connected, Chip select | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6471 | 1 | 2 MHz | 100 | 1.5 | 1 | 27(1) | 2.0 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 5-pin SOT-23(S), 5-pin SC-70(S) |
| MCP6472 | 2 | 2 MHz | 100 | 1.5 | 1 | 27(1) | 2.0 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 TDFN |
| MCP6474 | 4 | 2 MHz | 100 | 1.5 | 1 | 27(1) | 2.0 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |
| MCP6L71 | 1 | 2 MHz | 150 | 4 | 1 | 19(2) | 2.0 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC(S), 8-pin MSOP(S), 5-pin SOT-23(S, R) |
| MCP6L72 | 2 | 2 MHz | 150 | 4 | 1 | 19(2) | 2.0 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin MSOP |
| MCP6L74 | 4 | 2 MHz | 150 | 4 | 1 | 19(2) | 2.0 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |
| MIC6211 | 1 | 2.5 MHz | 1200 | 7 | 50000 | – | 4.0 to 32 | –40 to +85 | – | 5-pin SOT-23 |
| MCP6H71 | 1 | 2.7 MHz | 480 | 4 | 10 | 28(1) | Single Supply: 3.5 to 12<br>Dual Supply: ±1.75 to ±6 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| MCP6H72 | 2 | 2.7 MHz | 480 | 4 | 10 | 28(1) | Single Supply: 3.5 to 12<br>Dual Supply: ±1.75 to ±6 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| MCP6H74 | 4 | 2.7 MHz | 480 | 4 | 10 | 28(1) | Single Supply: 3.5 to 12<br>Dual Supply: ±1.75 to ±6 | –40 to +125 | Rail-to-Rail Output | 14-pin SOIC, 14-pin TSSOP |
| MCP601 | 1 | 2.8 MHz | 230 | 2 | 1 | 29(1) | 2.7 to 6.0 | –40 to +125 | Rail-to-Rail Output | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP, 5-pin SOT-23(S, R) |
| MCP602 | 2 | 2.8 MHz | 230 | 2 | 1 | 29(1) | 2.7 to 6.0 | –40 to +125 | Rail-to-Rail Output | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP |
| MCP603 | 1 | 2.8 MHz | 230 | 2 | 1 | 29(1) | 2.7 to 6.0 | –40 to +125 | Rail-to-Rail Output, Chip select | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP, 6-pin SOT-23(S) |
| MCP604 | 4 | 2.8 MHz | 230 | 2 | 1 | 29(1) | 2.7 to 6.0 | –40 to +125 | Rail-to-Rail Output | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP6L1 | 1 | 2.8 MHz | 200 | 3 | 1 | 21(2) | 2.7 to 6.0 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC(S), 8-pin MSOP(S), 5-pin SOT-23(S, R) |
| MCP6L2 | 2 | 2.8 MHz | 200 | 3 | 1 | 21(2) | 2.7 to 6.0 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC, 8-pin MSOP |
| MCP6L4 | 4 | 2.8 MHz | 200 | 3 | 1 | 21(2) | 2.7 to 6.0 | –40 to +125 | Rail-to-Rail Output | 14-pin SOIC, 14-pin TSSOP |
| MIC862 | 2 | 3.0 MHz | 31 | 6 | 10 | - | 2.0 to 5.25 | –40 to +85 | Rail-to-Rail Output | 8-pin SOT-23 |
| MCP6286 | 1 | 3.5 MHz | 540 | 1.5 | 1 | 5.4(2) | 2.2 to 5.5 | –40 to +125 | Rail-to-Rail Output, Low noise | 5-pin SOT-23(S, R) |
| MIC860 | 1 | 4.0 MHz | 33 | 20 | 20 | - | 2.43 to 5.25 | –40 to +85 | Rail-to-Rail Output | 5-pin SC-70 |
| MCP6481 | 1 | 4 MHz | 240 | 1.5 | 1 | 23(1) | 2.2 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 5-pin SOT-23(S), 5-pin SC-70(S) |
| MCP6482 | 2 | 4 MHz | 240 | 1.5 | 1 | 23(1) | 2.2 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 TDFN |
| MCP6484 | 4 | 4 MHz | 240 | 1.5 | 1 | 23(1) | 2.2 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |
| MCP6281 | 1 | 5 MHz | 445 | 3 | 1 | 16(1) | 2.2 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 5-pin SOT-23(S, R) |
| MCP6282 | 2 | 5 MHz | 445 | 3 | 1 | 16(1) | 2.2 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6283 | 1 | 5 MHz | 445 | 3 | 1 | 16(1) | 2.2 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output, Chip select | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 6-pin SOT-23(S, R) |
| MCP6284 | 4 | 5 MHz | 445 | 3 | 1 | 16(1) | 2.2 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |

**Legend:** S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout
**Note 1:** Values are typical at 1 kHz **2:** Values are typical at 10 kHz

## LINEAR: Op Amps (Continued)

| Part # | # per Package | GBWP | $I_Q$ Typical (µA) | $V_{OS}$ Max (mV) | Typical Input Bias Current (pA) | Input Voltage Noise Density (nV/rtHz) | Operating Voltage (V) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP6285 | 2 | 5 MHz | 400 | 3 | 1 | 16(1) | 2.2 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output, Dual connected, Chip select | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6H81 | 1 | 5.5 MHz | 700 | 4 | 10 | 23(1) | Single Supply: 3.5 to 12<br>Dual Supply: ±1.75 to ±6 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| MCP6H82 | 2 | 5.5 MHz | 700 | 4 | 10 | 23(1) | Single Supply: 3.5 to 12<br>Dual Supply: ±1.75 to ±6 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| MCP6H84 | 4 | 5.5 MHz | 700 | 4 | 10 | 23(1) | Single Supply: 3.5 to 12<br>Dual Supply: ±1.75 to ±6 | –40 to +125 | Rail-to-Rail Output | 14-pin SOIC, 14-pin 2 × 3 TDFN |
| MCP6491 | 1 | 7.5 MHz | 530 | 1.5 | 1 | 19(1) | 2.4 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 5-pin SOT-23(S), 5-pin SC-70(S) |
| MCP6492 | 2 | 7.5 MHz | 530 | 1.5 | 1 | 19(1) | 2.4 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 TDFN |
| MCP6494 | 4 | 7.5 MHz | 530 | 1.5 | 1 | 19(1) | 2.4 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |
| MCP6021 | 1 | 10 MHz | 1000 | 0.5 | 1 | 8.7(2) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, 1/2 $V_{CC}$ $V_{REF}$ | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP, 8-pin MSOP, 5-pin SOT-23(S, R) |
| MCP6022 | 2 | 10 MHz | 1000 | 0.5 | 1 | 8.7(2) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP |
| MCP6023 | 1 | 10 MHz | 1000 | 0.5 | 1 | 8.7(2) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Chip select, 1/2 $V_{CC}$ $V_{REF}$ | 8-pin PDIP, 8-pin SOIC, 8-pin TSSOP |
| MCP6024 | 4 | 10 MHz | 1000 | 0.5 | 1 | 8.7(2) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP6291 | 1 | 10 MHz | 1000 | 3 | 1 | 8.7(2) | 2.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 5-pin SOT-23(S, R) |
| MCP6292 | 2 | 10 MHz | 1000 | 3 | 1 | 8.7(2) | 2.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6293 | 1 | 10 MHz | 1000 | 3 | 1 | 8.7(2) | 2.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output, Chip select | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 6-pin SOT-23(S) |
| MCP6294 | 4 | 10 MHz | 1000 | 3 | 1 | 8.7(2) | 2.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP6295 | 2 | 10 MHz | 1100 | 3 | 1 | 8.7(2) | 2.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output, Dual connected, Chip select | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6H91 | 1 | 10 MHz | 2000 | 4 | 10 | 23(1) | Single Supply: 3.5 to 12<br>Dual Supply: ±1.75 to ±6 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| MCP6H92 | 2 | 10 MHz | 2000 | 4 | 10 | 23(1) | Single Supply: 3.5 to 12<br>Dual Supply: ±1.75 to ±6 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| MCP6H94 | 4 | 10 MHz | 2000 | 4 | 10 | 23(1) | Single Supply: 3.5 to 12<br>Dual Supply: ±1.75 to ±6 | –40 to +125 | Rail-to-Rail Output | 14-pin SOIC, 14-pin TSSOP |
| MCP6L91 | 1 | 10 MHz | 850 | 4 | 1 | 9.4(2) | 2.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC(S), 8-pin MSOP(S), 5-pin SOT-23(S, R) |
| MCP6L92 | 2 | 10 MHz | 850 | 4 | 1 | 9.4(2) | 2.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin MSOP |
| MCP6L94 | 4 | 10 MHz | 850 | 4 | 1 | 9.4(2) | 2.4 to 6.0 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |
| MCP621 | 1 | 20 MHz | 2500 | 0.2 | 5 | 13(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, Chip select, mCal Technology | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| MCP621S | 1 | 20 MHz | 2500 | 0.2 | 5 | 13(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, mCal Technology | 5-pin SOT-23(S) |
| MCP622 | 2 | 20 MHz | 2500 | 0.2 | 5 | 13(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, mCal Technology | 8-pin SOIC, 8-pin 3 × 3 DFN |
| MCP623 | 1 | 20 MHz | 2500 | 0.2 | 5 | 13(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, Chip select, mCal Technology | 6-pin SOT-23(S) |
| MCP624 | 4 | 20 MHz | 2500 | 0.2 | 5 | 13(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, mCal Technology | 14-pin SOIC, 14-pin TSSOP |
| MCP625 | 2 | 20 MHz | 2500 | 0.2 | 5 | 13(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, Chip selects, mCal Technology | 10-pin MSOP, 10-pin 3 × 3 DFN |
| MCP629 | 4 | 20 MHz | 2500 | 0.2 | 5 | 13(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output,Chip selects, mCal Technology | 16-pin 4 × 4 QFN |
| MCP631 | 1 | 24 MHz | 2500 | 8 | 4 | 10(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC, 8-pin 2 × 3 TDFN, 5-pin SOT-23(S) |
| MCP632 | 2 | 24 MHz | 2500 | 8 | 4 | 10(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC, 8-pin 3 × 3 DFN |
| MCP633 | 1 | 24 MHz | 2500 | 8 | 4 | 10(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, Chip select | 8-pin SOIC, 6-pin SOT-23 |

**Legend:** S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

**Note 1:** Values are typical at 1 kHz

**2:** Values are typical at 10 kHz

**3:** Values are typical at 1 MHz

## LINEAR: Op Amps (Continued)

| Part # | # per Package | GBWP | $I_Q$ Typical (µA) | $V_{OS}$ Max (mV) | Typical Input Bias Current (pA) | Input Voltage Noise Density (nV/rtHz) | Operating Voltage (V) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP634 | 4 | 24 MHz | 2500 | 8 | 4 | 10[3] | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output | 14-pin SOIC, 14-pin TSSOP |
| MCP635 | 2 | 24 MHz | 2500 | 8 | 4 | 10[3] | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, Chip selects | 10-pin MSOP, 10-pin 3 × 3 DFN |
| MCP639 | 4 | 24 MHz | 2500 | 8 | 4 | 10[3] | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, Chip selects | 16-pin 4 × 4 QFN |
| MCP651 | 1 | 50 MHz | 6000 | 0.2 | 6 | 7.5[3] | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, Chip select, mCal Technology | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| MCP651S | 1 | 50 MHz | 6000 | 0.2 | 6 | 7.5[3] | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, mCal Technology | 5-pin SOT-23[S] |
| MCP652 | 2 | 50 MHz | 6000 | 0.2 | 6 | 7.5[3] | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, mCal Technology | 8-pin SOIC, 8-pin 3 × 3 DFN |
| MCP653 | 1 | 50 MHz | 6000 | 0.2 | 6 | 7.5[3] | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, Chip select, mCal Technology | 6-pin SOT-23[S] |
| MCP654 | 4 | 50 MHz | 6000 | 0.2 | 6 | 7.5[3] | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, mCal Technology | 14-pin SOIC, 14-pin TSSOP |
| MCP655 | 2 | 50 MHz | 6000 | 0.2 | 6 | 7.5[3] | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, Chip selects, mCal Technology | 10-pin MSOP, 10-pin 3 × 3 DFN |
| MCP659 | 4 | 50 MHz | 6000 | 0.2 | 6 | 7.5[3] | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, Chip selects, mCal Technology | 16-pin 4 × 4 QFN |
| MCP660 | 3 | 60 MHz | 6000 | 8 | 6 | 6.8(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output | 14-pin SOIC, 14-pin TSSOP |
| MCP661 | 1 | 60 MHz | 6000 | 8 | 6 | 6.8(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC, 8-pin 2 × 3 TDFN, 5-pin SOT-23(S) |
| MCP662 | 2 | 60 MHz | 6000 | 8 | 6 | 6.8(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output | 8-pin SOIC, 8-pin 3 × 3 DFN |
| MCP663 | 1 | 60 MHz | 6000 | 8 | 6 | 6.8(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, Chip select | 8-pin SOIC, 6-pin SOT-23 |
| MCP664 | 4 | 60 MHz | 6000 | 8 | 6 | 6.8(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output | 14-pin SOIC, 14-pin TSSOP |
| MCP665 | 2 | 60 MHz | 6000 | 8 | 6 | 6.8(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, Chip selects | 10-pin MSOP, 10-pin 3 × 3 DFN |
| MCP669 | 4 | 60 MHz | 6000 | 8 | 6 | 6.8(3) | 2.5 to 5.5 | –40 to +125 | Rail-to-Rail Output, Chip selects | 16-pin 4 × 4 QFN |
| MIC920 | 1 | 80 MHz | 550 | 5 | 260000 | 10 | 5.0 to 18 | –40 to +85 | High Output Drive, High Slew Rate | 5-pin SC-70, 5-pin SOT-23 |

**Legend:** S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout
**Note 1:** Values are typical at 1 kHz
**2:** Values are typical at 10 kHz
**3:** Values are typical at 1 MHz

## LINEAR: Zero-Drift Operational Amplifiers

| Part # | # per Package | GBWP | $I_Q$ Max (mA) | $V_{OS}$ Max (µV) | $V_{OS}$ Drift Max (µV/°C) | Operating Voltage (V) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|
| MCP6V11 | 1 | 80 kHz | 0.011 | 8 | 0.05 | 1.6 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 5-pin SOT-23[S, U], 5-pin SC-70[U] |
| MCP6V12 | 2 | 80 kHz | 0.011 | 8 | 0.05 | 1.6 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin 2 × 3 TDFN, 8-pin MSOP |
| MCP6V14 | 4 | 80 kHz | 0.011 | 8 | 0.05 | 1.6 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin TSSOP |
| MCP6V31 | 1 | 300 kHz | 0.034 | 8 | 0.05 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 5-pin SOT-23[S, U], 5-pin SC-70[U] |
| MCP6V32 | 2 | 300 kHz | 0.034 | 8 | 0.05 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin 2 × 3 TDFN, 8-pin MSOP |
| MCP6V34 | 4 | 300 kHz | 0.034 | 8 | 0.05 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 14-pin TSSOP |
| TC7652 | 1 | 0.4 MHz | 3 | 5 | 0.05 | 5 to 16 | 0 to +70 | Single and Split Supply, Low Noise | 8-pin PDIP, 14-pin PDIP |
| MCP6V61 | 1 | 1 MHz | 0.13 | 8 | 0.015 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 5-pin SOT-23[S, U], 5-pin SC-70[U] |
| MCP6V62 | 2 | 1 MHz | 0.13 | 8 | 0.015 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 8-pin 2 × 3 TDFN, 8-pin MSOP |
| MCP6V64 | 4 | 1 MHz | 0.13 | 8 | 0.015 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 14-pin TSSOP |
| MCP6V01 | 1 | 1.3 MHz | 0.4 | 2 | 0.05 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| MCP6V02 | 2 | 1.3 MHz | 0.4 | 2 | 0.05 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin 4 × 4 DFN |
| MCP6V03 | 1 | 1.3 MHz | 0.4 | 2 | 0.05 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Chip select | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| MCP6V06 | 1 | 1.3 MHz | 0.4 | 3 | 0.05 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin 2 × 3 TDFN |

## LINEAR: Zero-Drift Operational Amplifiers (Continued)

| Part # | # per Package | GBWP | Iq Max (mA) | Vos Max (µV) | Vos Drift Max (µV/°C) | Operating Voltage (V) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|
| MCP6V07 | 2 | 1.3 MHz | 0.4 | 3 | 0.05 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin 4 × 4 DFN |
| MCP6V08 | 1 | 1.3 MHz | 0.4 | 3 | 0.05 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Chip select | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| TC913A/B | 2 | 1.5 MHz | 1.1 | 15 | 0.15/0.30 | 7 to 16 | 0 to +70 | Single and Split Supply | 8-pin PDIP, 8-pin SOIC |
| TC7650 | 1 | 2 MHz | 3.5 | 5 | 0.05 | 4.5 to 16 | 0 to +70 | Single and Split Supply | 8-pin PDIP, 14-pin PDIP |
| MCP6V26 | 1 | 2 MHz | 0.8 | 2 | 0.05 | 2.3 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 TDFN |
| MCP6V27 | 2 | 2 MHz | 0.8 | 2 | 0.05 | 2.3 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin MSOP, 8-pin 4 × 4 DFN |
| MCP6V28 | 1 | 2 MHz | 0.8 | 2 | 0.05 | 2.3 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Chip select | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 TDFN |
| MCP6V51 | 1 | 2 MHz | 0.59 | 15 | 0.038 | 4.5 to 45 | –40 to +125 | Rail-to-Rail Output, Enhanced EMI Rejection | 5-pin SOT-23(S), 8-pin MSOP |
| MCP6V71 | 1 | 2 MHz | 0.26 | 8 | 0.015 | 2.0 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 5-pin SOT-23(S, U), 5-pin SC-70(U) |
| MCP6V72 | 2 | 2 MHz | 0.26 | 8 | 0.015 | 2.0 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 8-pin 2 × 3 TDFN, 8-pin MSOP |
| MCP6V74 | 4 | 2 MHz | 0.26 | 8 | 0.015 | 2.0 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 14-pin TSSOP |
| MCP6V81 | 1 | 5 MHz | 0.77 | 9 | 0.02 | 2.2 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 5-pin SOT-23(S, U), 5-pin SC-70(U) |
| MCP6V82 | 2 | 5 MHz | 0.77 | 9 | 0.059 | 2.2 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 8-pin 2 × 3 TDFN, 8-pin MSOP |
| MCP6V84 | 4 | 5 MHz | 0.77 | 9 | 0.059 | 2.2 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 14-pin TSSOP |
| MCP6V91 | 1 | 10 MHz | 1.6 | 9 | 0.017 | 2.4 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 5-pin SOT-23(S, U), 5-pin SC-70(U) |
| MCP6V92 | 2 | 10 MHz | 1.6 | 9 | 0.04 | 2.4 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 8-pin 2 × 3 TDFN, 8-pin MSOP |
| MCP6V94 | 4 | 10 MHz | 1.6 | 9 | 0.04 | 2.4 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enhanced EMI Rejection | 14-pin TSSOP |

## LINEAR: Differential Amplifiers

| Part # | # per Package | GBWP | Slew Rate (V/µs) | Iq Typical (mA) | Vos Max (µV) | Input Voltage Noise Density (nV/rtHz) | Operating Voltage (V) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP6D11 | 1 | 90 MHz | 25 | 1.4 | 150 | 5 | 2.5 to 5.5 | –40 to +125 | Low noise, low distortion with power down pin | 8-pin MSOP, 16-pin 3 × 3 QFN |

## LINEAR: Programmable Gain Amplifiers (PGA)

| Part # | Channels | –3dB BW (MHz) | Iq Typ. (mA) | Vos (µV) | Operating Voltage (V) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|
| MCP6S21 | 1 | 2 to 12 | 1.1 | 275 | 2.5 to 5.5 | –40 to +85 | SPI, Eight Gain steps, Software shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6S22 | 2 | 2 to 12 | 1.1 | 275 | 2.5 to 5.5 | –40 to +85 | SPI, Eight Gain steps, Software shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6S26 | 6 | 2 to 12 | 1.1 | 275 | 2.5 to 5.5 | –40 to +85 | SPI, Eight Gain steps, Software shutdown | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP6S28 | 8 | 2 to 12 | 1.1 | 275 | 2.5 to 5.5 | –40 to +85 | SPI, Eight Gain steps, Software shutdown | 16-pin PDIP, 16-pin SOIC |
| MCP6S91 | 1 | 1 to 18 | 1.0 | 4000 | 2.5 to 5.5 | –40 to +125 | SPI, Eight Gain steps, Software shutdown, VREF | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6S92 | 2 | 1 to 18 | 1.0 | 4000 | 2.5 to 5.5 | –40 to +125 | SPI, Eight Gain steps, Software shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6S93 | 2 | 1 to 18 | 1.0 | 4000 | 2.5 to 5.5 | –40 to +125 | SPI, Eight Gain steps, Software shutdown, VREF, SO | 10-pin MSOP |

## LINEAR: Selectable Gain Amplifiers (SGA)

| Part # | Channels | –3dB BW (kHz) | Iq (µA) | Vos (mV) | Operating Voltage (V) | Temperature Range (°C) | Gain Steps (V/V) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|
| MCP6G01 | 1 | 900 | 110 | 4.5 | 1.8 to 5.5 | –40 to +125 | 1, 10, 50 | Tri-State control pin | 8-pin SOIC, 8-pin MSOP, 5-pin SOT-23(S, R, U) |
| MCP6G02 | 2 | 900 | 110 | 4.5 | 1.8 to 5.5 | –40 to +125 | 1, 10, 50 | Tri-State control pin | 8-pin SOIC, 8-pin MSOP |
| MCP6G03 | 1 | 900 | 110 | 4.5 | 1.8 to 5.5 | –40 to +125 | 1, 10, 50 | Tri-State control pin, chip select | 8-pin SOIC, 8-pin MSOP |
| MCP6G04 | 4 | 900 | 110 | 4.5 | 1.8 to 5.5 | –40 to +125 | 1, 10, 50 | Tri-State control pin | 14-pin SOIC, 14-pin TSSOP |

## LINEAR: Instrumentation Amplifiers

| Part # | # Per Package | Bandwidth (kHz) | Iq Max (mA) | Max Vos (µV) | Vos Drift Max (µV/°C) | Operating Voltage (V) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|
| MCP6N11 | 1 | 500 | 1.1 | 350 | 2.7 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, mCal Technology | 8-pin SOIC, 8-pin 2 × 3 TDFN |
| MCP6N16 | 1 | 500 | 1.6 | 17 | 0.06 | 1.8 to 5.5 | –40 to +125 | Rail-to-Rail Input/Output, Enable Pin, Enhanced EMI Rejection | 8-pin MSOP, 8-pin 3 × 3 DFN |

## LINEAR: Comparators

| Part # | # Per Package | VREF (V) | Typical Propagation Delay (µs) | IQ Typical (µA) | VOS Max (mV) | Operating Voltage (V) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|
| MCP6541 | 1 | – | 4 | 1 | 5 | 1.6 to 5.5 | –40 to +125 | Push-Pull, Rail-to-Rail Input/Output | 5-pin SOT-23(S, R, U), 5-pin SC-70(S, U), 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6542 | 2 | – | 4 | 1 | 5 | 1.6 to 5.5 | –40 to +125 | Push-Pull, Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6543 | 1 | – | 4 | 1 | 5 | 1.6 to 5.5 | –40 to +125 | Push-Pull, Rail-to-Rail Input/Output, Chip select | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6544 | 4 | – | 4 | 1 | 5 | 1.6 to 5.5 | –40 to +125 | Push-Pull, Rail-to-Rail Input/Output | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP6546 | 1 | – | 4 | 1 | 5 | 1.6 to 5.5 | –40 to +125 | Open-drain, 9V, Rail-to-Rail Input/Output | 5-pin SOT-23(S, R, U), 5-pin SC-70(S, U), 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6547 | 2 | – | 4 | 1 | 5 | 1.6 to 5.5 | –40 to +125 | Open-drain, 9V, Rail-to-Rail Input/Output | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6548 | 1 | – | 4 | 1 | 5 | 1.6 to 5.5 | –40 to +125 | Open-drain, 9V, Rail-to-Rail Input/Output, Chip select | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP |
| MCP6549 | 4 | – | 4 | 1 | 5 | 1.6 to 5.5 | –40 to +125 | Open-drain, 9V, Rail-to-Rail Input/Output | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP65R41 | 1 | 1.21/2.4 | 4 | 2.5 | 10 | 1.8 to 5.5 | –40 to +125 | Push-Pull, Rail-to-Rail Input/Output, VREF | 6-pin SOT-23 |
| MCP65R46 | 1 | 1.21/2.4 | 4 | 2.5 | 10 | 1.8 to 5.5 | –40 to +125 | Open Drain, Rail-to-Rail Input/Output, VREF | 6-pin SOT-23 |
| MCP6561 | 1 | – | 0.047 | 100 | 10 | 1.8 to 5.5 | –40 to +125 | Push-Pull, Rail-to-Rail Input/Output | 5-pin SOT-23(S, R, U), 5-pin SC-70(S) |
| MCP6562 | 2 | – | 0.047 | 100 | 10 | 1.8 to 5.5 | –40 to +125 | Push-Pull, Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin MSOP |
| MCP6564 | 4 | – | 0.047 | 100 | 10 | 1.8 to 5.5 | –40 to +125 | Push-Pull, Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |
| MCP6566 | 1 | – | 0.047 | 100 | 10 | 1.8 to 5.5 | –40 to +125 | Open-Drain, Rail-to-Rail Input/Output | 5-pin SOT-23(S, R, U), 5-pin SC-70(S) |
| MCP6567 | 2 | – | 0.047 | 100 | 10 | 1.8 to 5.5 | –40 to +125 | Open-Drain, Rail-to-Rail Input/Output | 8-pin SOIC, 8-pin MSOP |
| MCP6569 | 4 | – | 0.047 | 100 | 10 | 1.8 to 5.5 | –40 to +125 | Open-Drain, Rail-to-Rail Input/Output | 14-pin SOIC, 14-pin TSSOP |
| MIC6270 | 1 | – | 0.6 | 300 | 5 | 2.0 to 36 | –40 to +85 | Open Collector Output, High-Voltage | 5-pin SOT-23 |
| MIC7211 | 1 | – | 4 | 5 | 10 | 2.2 to 5.0 | –40 to +85 | Rail-to-Rail Input, Push-Pull Output | 5-pin SOT-23 |
| MIC7221 | 1 | – | 4 | 5 | 10 | 2.2 to 5.0 | –40 to +85 | Rail-to-Rail Input, Open-Drain Output | 5-pin SOT-23 |
| MIC833 | 1 | 1.25 | 5 | 1 | – | 1.5 to 5.5 | –40 to +85 | Windowed Comparator with Adjustable Hystersis | 5-pin SOT-23 |
| MIC841 | 1 | 1.25 | 12 | 1.5 | – | 1.5 to 5.5 | –40 to +85 | Windowed Comparator with Adjustable Hystersis, Push-Pull and Open-Drain Output Options | 5-pin SC-70, 6-pin 1.6 × 1.6 TDFN |
| MIC842 | 1 | 1.25 | 12 | 1.5 | – | 1.5 to 5.5 | –40 to +85 | Windowed Comparator with Hystersis, Push-Pull and Open-Drain Output Options | 5-pin SC-70, 4-pin 1.2 × 1.6 TDFN |

**Legend:** S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

## LINEAR: Current Sense Amplifiers

| Part # | # per Package | Input Common-Mode Range (V) | VOS Max (uV) | VOS Drift Max (nV/°C) | Max Gain Error (%) | Bandwidth (kHz) | Iq Max (mA) | Operating Voltage (V) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MCP6C02 | 1 | 3 to 65 | 16 (G=20), 14 (G=50), 12 (G=100) | 85 (G=20), 70 (G=50), 65 (G=100) | 1.6 | 500 (G=20), 500 (G=50), 350 (G=100) | 0.75 | 2 to 5.5 | –40 to +125 | Bidirectional Current Sense Amplifier, Enhanced EMI Rejection | 6-pin SOT-23 |
| **MCP6C04** | **1** | **3 to 52** | **30 (G=20), 27 (G=50), 24 (G=100)** | **180 (G=20), 140 (G=50), 130 (G=100)** | **1.6** | **500 (G=20), 500 (G=50), 350 (G=100)** | **0.84** | **2 to 5.5** | **–40 to +125** | **Bidirectional Current Sense Amplifier, Enhanced EMI Rejection** | **6-pin SOT-23** |

# MIXED SIGNAL

## MIXED SIGNAL: Successive Approximation Register (SAR) A/D Converters

| Part # | Resolution (bits) | Maximum Sampling Rate (ksamples/sec) | # of Input Channels | Input Type | Interface | Input Voltage Range (V) | Max. Supply Current (µA) | Max. INL | Temperature Range (°C) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP3021 | 10 | 22 | 1 | Single-ended | I²C | 2.7 to 5.5 | 250 | ±1 LSB | –40 to +125 | 5-pin SOT-23A |
| MCP3001 | 10 | 200 | 1 | Single-ended | SPI | 2.7 to 5.5 | 500 | ±1 LSB | –40 to +85 | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin TSSOP |
| MCP3002 | 10 | 200 | 2 | Single-ended | SPI | 2.7 to 5.5 | 650 | ±1 LSB | –40 to +85 | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin TSSOP |
| MCP3004 | 10 | 200 | 4 | Single-ended | SPI | 2.7 to 5.5 | 550 | ±1 LSB | –40 to +85 | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP3008 | 10 | 200 | 8 | Single-ended | SPI | 2.7 to 5.5 | 550 | ±1 LSB | –40 to +85 | 16-pin PDIP, 16-pin SOIC |
| MCP3221 | 12 | 22 | 1 | Single-ended | I²C | 2.7 to 5.5 | 250 | ±2 LSB | –40 to +125 | 5-pin SOT-23A |
| MCP3201 | 12 | 100 | 1 | Single-ended | SPI | 2.7 to 5.5 | 400 | ±1 LSB | –40 to +85 | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin TSSOP |

## MIXED SIGNAL: Successive Approximation Register (SAR) A/D Converters

| Part # | Resolution (bits) | Maximum Sampling Rate (ksamples/sec) | # of Input Channels | Input Type | Interface | Input Voltage Range (V) | Max. Supply Current (µA) | Max. INL | Temperature Range (°C) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP3202 | 12 | 100 | 2 | Single-ended | SPI | 2.7 to 5.5 | 550 | ±1 LSB | –40 to +85 | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin TSSOP |
| MCP3204 | 12 | 100 | 4 | Single-ended | SPI | 2.7 to 5.5 | 400 | ±1 LSB | –40 to +85 | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP3208 | 12 | 100 | 8 | Single-ended | SPI | 2.7 to 5.5 | 400 | ±1 LSB | –40 to +85 | 16-pin PDIP, 16-pin SOIC |
| MCP3301 | 13 | 100 | 1 | Differential | SPI | 2.7 to 5.5 | 450 | ±1 LSB | –40 to +85 | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin TSSOP |
| MCP3302 | 13 | 100 | 2 | Differential | SPI | 2.7 to 5.5 | 450 | ±1 LSB | –40 to +85 | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP3304 | 13 | 100 | 4 | Differential | SPI | 2.7 to 5.5 | 450 | ±1 LSB | –40 to +85 | 16-pin PDIP, 16-pin SOIC |
| MCP33111D | 12 | 1000 | 1 | Differential | SPI | 2.5 to 5.1 | 2250 | ± 0.35 | –40 to +85 | 10-pin MSOP, 10-pin TDFN |
| MCP33121D | 14 | 1000 | 1 | Differential | SPI | 2.5 to 5.1 | 2250 | ± 1.5 | –40 to +85 | 10-pin MSOP, 10-pin TDFN |
| MCP33131D | 16 | 1000 | 1 | Differential | SPI | 2.5 to 5.1 | 2250 | ± 6 | –40 to +85 | 10-pin MSOP, 10-pin TDFN |

## MIXED SIGNAL: Delta-Sigma A/D Converters

| Part # | Resolution (bits) | Maximum Sampling Rate (samples/sec) | # of Input Channels | Interface | Supply Voltage Range (V) | Typical Supply Current (µA) | Typical INL (ppm) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP3421 | 18 to 12 | 4 to 240 | 1 Diff | I²C | 2.7 to 5.5 | 155 | 10 | –40 to +125 | PGA, VREF | 6-pin SOT-23A |
| MCP3422 | 18 to 12 | 4 to 240 | 2 Diff | I²C | 2.7 to 5.5 | 145 | 10 | –40 to +125 | PGA, VREF | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN |
| MCP3423 | 18 to 12 | 4 to 240 | 2 Diff | I²C | 2.7 to 5.5 | 145 | 10 | –40 to +125 | PGA, VREF, Selectable I²C addressing | 10-pin MSOP, 10-pin 3 × 3 DFN |
| MCP3424 | 18 to 12 | 4 to 240 | 4 Diff | I²C | 2.7 to 5.5 | 145 | 10 | –40 to +125 | PGA, VREF, Selectable I²C addressing | 14-pin SOIC, 14-pin TSSOP |
| MCP3425 | 16 to 12 | 15 to 240 | 1 Diff | I²C | 2.7 to 5.5 | 155 | 10 | –40 to +125 | PGA, VREF | 6-pin SOT-23A |
| MCP3426 | 16 to 12 | 15 to 240 | 2 Diff | I²C | 2.7 to 5.5 | 145 | 10 | –40 to +125 | PGA, VREF | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN |
| MCP3427 | 16 to 12 | 15 to 240 | 2 Diff | I²C | 2.7 to 5.5 | 145 | 10 | –40 to +125 | PGA, VREF, Selectable I²C addressing | 10-pin MSOP, 10-pin 3 × 3 DFN |
| MCP3428 | 16 to 12 | 15 to 240 | 4 Diff | I²C | 2.7 to 5.5 | 145 | 10 | –40 to +125 | PGA, VREF, Selectable I²C addressing | 14-pin SOIC, 14-pin TSSOP |
| **MCP3461** | **16** | **153.6k** | **1** | **SPI** | **2.7 to 3.6** | **930** | **7** | **–40 to +125** | **One Differential or Two Single-ended Input Channels, 153.6 kSPS, Low-Noise 16-bit Delta-Sigma ADCs** | **3 mm × 3 mm UQFN-20** |
| **MCP3462** | **16** | **153.6k** | **2** | **SPI** | **2.7 to 3.6** | **930** | **7** | **–40 to +125** | **Two Differential or Four Single-ended Input Channels, 153.6 kSPS, Low-Noise 16-bit Delta-Sigma ADCs** | **3 mm × 3 mm UQFN-20** |
| **MCP3464** | **16** | **153.6k** | **4** | **SPI** | **2.7 to 3.6** | **930** | **7** | **–40 to +125** | **Four Differential or Eight Single-ended Input Channels, 153.6 kSPS, Low-Noise 16-bit Delta-Sigma ADCs** | **3 mm × 3 mm UQFN-20** |
| **MCP3561** | **24** | **153.6k** | **1** | **SPI** | **2.7 to 3.6** | **930** | **7** | **–40 to +125** | **One Differential or Two Single-ended Input Channels, 153.6 kSPS, Low-Noise 24-bit Delta-Sigma ADCs** | **3 mm × 3 mm UQFN-20** |
| **MCP3562** | **24** | **153.6k** | **2** | **SPI** | **2.7 to 3.6** | **930** | **7** | **–40 to +125** | **Two Differential or Four Single-ended Input Channels, 153.6 kSPS, Low-Noise 24-bit Delta-Sigma ADCs** | **3 mm × 3 mm UQFN-20** |
| **MCP3564** | **24** | **153.6k** | **4** | **SPI** | **2.7 to 3.6** | **930** | **7** | **–40 to +125** | **Four Differential or Eight Single-ended Input Channels, 153.6 kSPS, Low-Noise 24-bit Delta-Sigma ADCs** | **3 mm × 3 mm UQFN-20** |
| MCP3550-50 | 22 | 13 | 1 Diff | SPI | 2.7 to 5.5 | 120 | 2 | –40 to +125 | 50 Hz rejection | 8-pin SOIC, 8-pin MSOP |
| MCP3550-60 | 22 | 15 | 1 Diff | SPI | 2.7 to 5.5 | 140 | 2 | –40 to +125 | 60 Hz rejection | 8-pin SOIC, 8-pin MSOP |
| MCP3551 | 22 | 14 | 1 Diff | SPI | 2.7 to 5.5 | 120 | 2 | –40 to +125 | Simultaneous 50/60 Hz rejection | 8-pin SOIC, 8-pin MSOP |
| MCP3553 | 20 | 60 | 1 Diff | SPI | 2.7 to 5.5 | 140 | 2 | –40 to +125 | | 8-pin SOIC, 8-pin MSOP |

## MIXED SIGNAL: Pipelined A/D Converters

| Part # | Resolution | Max Sample Rate (Msamples/sec) | # of Input Channels | Input Type | Interface | Supply Voltage (V) | Power Dissipation (mW) | Input Channel BW (MHz) | SNR (dB) | SFDR (dB) | Input Range (Vp-p) | Features | Temperature Range (°C) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCP37D31-200 | 16 | 200 | 1, 2, 4, 8 | Differential | Serial DDR LVDS or Parallel CMOS | 1.2, 1.8 | 490 | 500 | 74.7 | 90 | 2.98 | Decimation filters, digital down-converter | –40 to +85 | 124-pin VTLA, 121-pin TFBGA |
| MCP37231-200 | 16 | 200 | 1, 2, 4, 8 | Differential | Serial DDR LVDS or Parallel CMOS | 1.2, 1.8 | 490 | 500 | 74.7 | 90 | 2.98 | Decimation filters | –40 to +85 | 124-pin VTLA, 121-pin TFBGA |

## MIXED SIGNAL: Pipelined A/D Converters

| Part # | Resolution | Max Sample Rate (Msamples/sec) | # of Input Channels | Input Type | Interface | Supply Voltage (V) | Power Dissipation (mW) | Input Channel BW (MHz) | SNR (dB) | SFDR (dB) | Input Range (Vp-p) | Features | Temperature Range (°C) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCP37D20-200 | 14 | 200 | 1 | Differential | Serial DDR LVDS or Parallel CMOS | 1.2, 1.8 | 348 | 650 | 67.8 | 96 | 1.8 | Decimation filters, digital down-converter | –40 to +85 | 124-pin VTLA, 121-pin TFBGA |
| MCP37220-200 | 14 | 200 | 1 | Differential | Serial DDR LVDS or Parallel CMOS | 1.2, 1.8 | 348 | 650 | 67.8 | 96 | 1.8 | Decimation filters | –40 to +85 | 124-pin VTLA, 121-pin TFBGA |
| MCP37D21-200 | 14 | 200 | 1, 2, 4, 8 | Differential | Serial DDR LVDS or Parallel CMOS | 1.2, 1.8 | 490 | 500 | 74.2 | 90 | 2.98 | Decimation filters, digital down-converter | –40 to +85 | 124-pin VTLA, 121-pin TFBGA |
| MCP37221-200 | 14 | 200 | 1, 2, 4, 8 | Differential | Serial DDR LVDS or Parallel CMOS | 1.2, 1.8 | 490 | 500 | 74.2 | 90 | 2.98 | Decimation filters | –40 to +85 | 124-pin VTLA, 121-pin TFBGA |
| MCP37D10-200 | 12 | 200 | 1 | Differential | Serial DDR LVDS or Parallel CMOS | 1.2, 1.8 | 338 | 650 | 67 | 96 | 1.8 | Decimation filters, digital down-converter, noise-shaping requantizer | –40 to +85 | 124-pin VTLA, 121-pin TFBGA |
| MCP37210-200 | 12 | 200 | 1 | Differential | Serial DDR LVDS or Parallel CMOS | 1.2, 1.8 | 338 | 650 | 67 | 96 | 1.8 | Decimation filters, noise-shaping requantizer | –40 to +85 | 124-pin VTLA, 121-pin TFBGA |
| MCP37D11-200 | 12 | 200 | 1, 2, 4, 8 | Differential | Serial DDR LVDS or Parallel CMOS | 1.2, 1.8 | 468 | 500 | 71.3 | 90 | 2.98 | Decimation filters, digital down-converter | –40 to +85 | 124-pin VTLA, 121-pin TFBGA |
| MCP37211-200 | 12 | 200 | 1, 2, 4, 8 | Differential | Serial DDR LVDS or Parallel CMOS | 1.2, 1.8 | 468 | 500 | 71.3 | 90 | 2.98 | Decimation filters, noise shaping requantizer | –40 to +85 | 124-pin VTLA, 121-pin TFBGA |

## MIXED SIGNAL: Energy Metering and Power Monitoring ICs

| Part # | Dynamic Range | Power System | Typical Accuracy | Input Channels | ADC Resolution | Event Monitoring | Zero-Cross Detection Pin | Output Type | $V_{DD}$ (V) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCP39F511 | 4000:1 | Single Phase | 0.1% | I, V, Temp. | 24-bit | 5 | Yes | UART/ Single-wire | 2.7 to 3.6 | –40 to +125 | Power monitoring IC with active, reactive and apparent power, active and reactive energy, PF, RMS current/voltage, frequency, event notifications, EEPROM, PWM output | QFN |
| MCP39F521 | 4000:1 | Single Phase | 0.1% | I, V, Temp. | 24-bit | 4 | Yes | $I^2C$ | 2.7 to 3.6 | –40 to +125 | Power monitoring IC with active, reactive and apparent power, active and reactive energy, PF, RMS current/voltage, frequency, event notifications, EEPROM | QFN |
| MCP39F511N | 4000:1 | Single Phase | 0.5% | I1, I2, V | 24-bit | 6 | Yes | UART | 2.7 to 3.6 | –40 to +125 | Dual-channel power monitoring IC with active, reactive and apparent power, active and reactive energy, PF, RMS current/voltage, frequency, event notifications, EEPROM, PWM output | QFN |
| **MCP39F511A** | **4000:1** | **Single Phase** | **0.1%** | **I, V, Temp** | **24-bit** | **5** | **Yes** | **UART/ Single-wire** | **2.7 to 3.** | **–40 to +125** | **AC & DC dual-mode power monitoring IC with active, reactive and apparent power, active and reactive energy, PF, RMS current/voltage, frequency, event notifications, EEPROM, PWM output** | **QFN** |
| MCP3905A/ 06A | 500:1/ 1000:1 | Single Phase | 0.10% | I, V | 16-bit | – | – | Active Power Pulse | 4.5 to 5.5 | –40 to +125 | Active power calculation | SSOP |
| ATM90E26 | 5000:1 | Single Phase | 0.1% | I, V, N | N/A | 1 | Yes | SPI/UART/ Pulse | 2.8 to 3.6 | –40 to +85 | Single-phase energy meter IC with active, reactive and apparent power, active and reactive energy, PF, RMS current/voltage, anti-tampering | SSOP |
| ATM90E32AS | 6000:1 | Poly-phase | 0.1% | 3xI, 3xV | N/A | 8 | Yes | SPI/Pulse | 2.8 to 3.6 | –40 to +85 | Three-phase energy meter IC with active, reactive and apparent power and energy, PF, RMS current/voltage, frequency, fundamental and harmonic measurement, event notifications, temperature sensor | TQFP |
| ATM90E36A | 6000:1 | Poly-phase | 0.1% | 3xI, 3xV, N | N/A | 5 | Yes | SPI/Pulse | 2.8 to 3.6 | –40 to +85 | Three-phase energy meter IC with active, reactive and apparent power and energy, PF, RMS current/voltage, frequency, DFT function, fundamental and harmonic measurement, event notifications, temperature sensor | TQFP |

## MIXED SIGNAL: Energy Measurement AFEs

| Part # | Dynamic Range | Typical Accuracy | ADC Channels | ADC Resolution | SINAD | Gain Selection | Output Type | $V_{DD}$ (V) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MCP3918/10 | 10000:1 | 0.1% | 1/2 | 24-bit | 93.5 | Up to 32 | SPI/2-wire | 2.7 to 3.6 | –40 to +125 | AFE with phase correction, Programmable data rate, 16-bit CRC, Register map lock, 2-wire interface | SSOP, QFN |
| MCP3919 | 10000:1 | 0.1% | 3 | 24-bit | 93.5 | Up to 32 | SPI/2-wire | 2.7 to 3.6 | –40 to +125 | AFE with phase correction, Programmable data rate, 16-bit CRC, Register map lock, 2-wire interface | SSOP, QFN |
| MCP3912 | 10000:1 | 0.1% | 4 | 24-bit | 93.5 | Up to 32 | SPI | 2.7 to 3.6 | –40 to +125 | AFE with phase correction, Programmable data rate, 16-bit CRC, Register map lock | SSOP, QFN |
| MCP3913/14 | 10000:1 | 0.1% | 6/8 | 24-bit | 94.5 | Up to 32 | SPI | 2.7 to 3.6 | –40 to +125 | AFE with phase correction, Programmable data rate, 16-bit CRC, Register map lock | SSOP, UQFN |
| ATSENSE101 | 3000:1 | 0.1% | 3 | 16/32-bit | 84 | Up to 8 | SPI | 3.0 to 3.6 | –40 to +85 | Die temperature sensor | SOIC |
| ATSENSE201(H) | 3000:1 | 0.1% | 4 | 16/32-bit | 84 | Up to 8 | SPI | 3.0 to 3.6 | –40 to +85 | Die temperature sensor | TQFP |
| ATSENSE301(H) | 3000:1 | 0.1% | 7 | 16/32-bit | 84 | Up to 8 | SPI | 3.0 to 3.6 | –40 to +85 | Die temperature sensor | TQFP |

## MIXED SIGNAL: Current/DC Power Measurement ICs

| Part # | # of Current Sensors | Description | Full Scale Range (mV) | Current Measurement Max Accr (%) | Effective Sampling Interval Min to Max (msec) | Bus Voltage Range (V) | # of Temp. Monitors (Ambient, Remote) | Temp. Accuracy Typ/Max (°C) | Alert/ THERM | Peak Detection | Address Select | Package |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PAC1710 | 1 | SMBus/I²C Current/DC Power Sensor | 10, 20, 40, 80 | ±1 | 2.5 to 2,600 | 0 to + 40 | – | – | 1 | – | Yes | 10-pin DFN |
| PAC1720 | 2 | Dual SMBus/I²C Current/DC Power Sensor | 10, 20, 40, 80 | ±1 | 2.5 to 2,600 | 0 to + 40 | – | – | 1 | – | Yes | 10-pin DFN |
| PAC1921 | 2 | SMBus/I²C Current/Power Sensor with Analog Output | 100 | ±1 | 2.5 to 2,900 | 0 to + 32 | – | – | – | – | Yes | 10-pin DFN |
| **PAC1932** | **2** | **SMBus/I²C Current/Power Sensor with Accumulator** | **100** | **±0.9** | **0.98 to 125** | **0 to +32** | **N/A** | **N/A** | **1** | **-** | **Yes** | **16-pin QFN** |
| **PAC1933** | **3** | **SMBus/I²C Current/Power Sensor with Accumulator** | **100** | **±0.9** | **0.98 to 125** | **0 to +32** | **N/A** | **N/A** | **1** | **-** | **Yes** | **16-pin QFN** |
| PAC1934 | 4 | SMBus/I²C Current/Power Sensor with Accumulator | 100 | ±0.9 | 0.98 to 125 | 0 to + 32 | – | – | 1 | – | Yes | 2.225 × 2.17 mm WLCSP, 16-pin QFN |
| EMC1701-1 | 1 | SMBus/I²C Current/DC Power Sensor with Temperature Monitoring | 10, 20, 40, 80 | ±1 | 2.5 to 2,600 | +3 to +24 | 1, 0 | ±0.25/±1 | 2 | Hardware | Yes | 12-pin 4 × 4 QFN |
| EMC1701-2 | 1 | SMBus/I²C Current/DC Power Sensor with Temperature Monitoring | 10, 20, 40, 80 | ±1 | 2.5 to 2,600 | +3 to +24 | 1, 0 | ±0.25/±1 | 2 | Software | Yes | 10-pin MSOP |
| EMC1702-1 | 1 | SMBus/I²C Current/DC Power Sensor with Two Temperature Monitors | 10, 20, 40, 80 | ±1 | 2.5 to 2,600 | +3 to +24 | 1, 1 | ±0.25/±1 | 2 | Hardware | Yes | 12-pin 4 × 4 QFN |
| EMC1704-1 | 1 | SMBus/I²C Current/DC Power Sensor with Four Temperature Monitors | 10, 20, 40, 80 | ±1 | 2.5 to 2,600 | +3 to +24 | 1, 3 | ±0.25/±1 | 2 | Software | Yes | 14-pin SOIC |
| EMC1704-2 | 1 | SMBus/I²C Current/DC Power Sensor with Four Temperature Monitors | 10, 20, 40, 80 | ±1 | 2.5 to 2,600 | +3 to +24 | 1, 3 | ±0.25/±1 | 2 | Hardware | Yes | 16-pin 4 × 4 QFN |

## MIXED SIGNAL: Dual-Slope A/D Converters

| Part # | Supply Voltage (V) | Input Voltage Range | Resolution | Sampling Rate (Conv/s) | Input Channels | Data Interface | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|
| TC500 | ±4.5 to ±7.5 | $V_{SS}$ + 1.5V to $V_{DD}$ – 1.5V | Up to 16 bits | 4 to 10 | 1 | 3-Wire | 0 to +70 | Differential input range, Programmable resolution/ conversion time | 16-pin PDIP, 16-pin SOIC |
| TC500A | ±4.5 to ±7.5 | $V_{SS}$ + 1.5V to $V_{DD}$ – 1.5V | Up to 17 bits | 4 to 10 | 1 | 3-Wire | 0 to +70 | Differential input range, Programmable resolution/ conversion time | 16-pin PDIP, 16-pin SOIC |
| TC510 | +4.5 to +5.5 | $V_{SS}$ + 1.5V to $V_{DD}$ – 1.5V | Up to 17 bits | 4 to 10 | 1 | 3-Wire | 0 to +70 | Differential input range, Programmable resolution/ conversion time, Charge pump (–V) output pin | 24-pin PDIP, 24-pin SOIC |
| TC514 | +4.5 to +5.5 | $V_{SS}$ + 1.5V to $V_{DD}$ – 1.5V | Up to 17 bits | 4 to 10 | 4 | 3-Wire | 0 to +70 | Differential input range, Programmable resolution/ conversion time, Charge pump (–V) output pin | 28-pin PDIP, 28-pin SOIC |
| TC520A | +4.5 to +5.5 | – | – | – | – | Serial port | 0 to +70 | Optional serial interface adapter for TC500/500A/510/514 | 14-pin PDIP, 16-pin SOIC |
| TC7109 | ±4.5 to ±5.5 | $V_{SS}$ + 1.5V to $V_{DD}$ – 1.0V | 12 bits plus sign bit | 2 to 10 | 1 | Parallel or Serial port | –25 to +85 | Differential input range | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |
| TC7109A | ±4.5 to ±5.5 | $V_{SS}$ + 1.5V to $V_{DD}$ – 1.0V | 12 bits plus sign bit | 2 to 10 | 1 | Parallel or Serial port | –25 to +85 | Differential input range | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |

## MIXED SIGNAL: Binary and BCD A/D Converters

| Part # | Description | Supply Voltage (V) | Input Voltage Range | Resolution (Digits) | Resolution (Counts) | Max Power (mW) | Data Interface | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| TC850 | Binary A/D | ±5 | $V_{SS}$ + 1.5V to $V_{DD}$ – 1.5V | 15-bit | ±32,768 | 35 | 8-bit parallel | –25 to +70 | Highest conversion speed (40 conv/sec) | 44-pin PLCC, 40-pin PDIP |
| TC14433 | BCD A/D | ±4.5 to ±8 | ±199.9 mV to 1.999V | 3½ | ±2,000 | 20 | MUXed BCD | –40 to +85 | For DMM, DPM, Data loggers | 24-pin SOIC, 24-pin PDIP, 28-pin PLCC |
| TC14433A | BCD A/D | ±4.5 to ±8 | ±199.9 mV to 1.999V | 3½ | ±2,000 | 20 | MUXed BCD | –40 to +85 | For DMM, DPM, Data loggers | 24-pin PDIP, 28-pin PLCC |

## MIXED SIGNAL: Display A/D Converters

| Part # | Display Type | Supply Voltage (V) | Resolution (Digits) | Resolution (Counts) | Power (mW) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|
| TC7106 | LCD | 9 | 3½ | ±2,000 | 10 | –25 to +85 | For DMM, DPM, Data logger applications | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |
| TC7106A | LCD | 9 | 3½ | ±2,000 | 10 | –25 to +85 | For DMM, DPM, Data logger applications | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |
| TC7107 | LED | ±5 | 3½ | ±2,000 | 10 | –25 to +85 | For DMM, DPM, Data logger applications | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |
| TC7107A | LED | ±5 | 3½ | ±2,000 | 10 | –25 to +85 | For DMM, DPM, Data logger applications | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |
| TC7116 | LCD | 9 | 3½ | ±2,000 | 10 | –25 to +85 | Hold function | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |
| TC7116A | LCD | 9 | 3½ | ±2,000 | 10 | –25 to +85 | Hold function | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |
| TC7117 | LED | ±5 | 3½ | ±2,000 | 10 | –25 to +85 | Hold function | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |

## MIXED SIGNAL: Display A/D Converters

| Part # | Display Type | Supply Voltage (V) | Resolution (Digits) | Resolution (Counts) | Power (mW) | Temperature Range (°C) | Features | Packages |
|---|---|---|---|---|---|---|---|---|
| TC7117A | LED | ±5 | 3½ | ±2,000 | 10 | –25 to +85 | Hold function | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |
| TC7126 | LCD | 9 | 3½ | ±2,000 | 0.5 | –25 to +85 | Low-power TC7106 | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |
| TC7126A | LCD | 9 | 3½ | ±2,000 | 0.5 | –25 to +85 | Low-power TC7106 | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |
| TC7129 | LCD | 9 | 4½ | ±20,000 | 4.5 | 0 to +70 | Lowest noise ±3 mV sensitivity | 40-pin PDIP, 44-pin PLCC, 44-pin MQFP |

## MIXED SIGNAL: Digital Potentiometers

| Part # | # of Taps | Memory | # Per Package | Interface | Resistance (kOhms) | INL (Max) | DNL (Max) | Temperature Range (°C) | Comments | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP4011 | 64 | Volatile | 1 | Up/Down | 2.1, 5, 10, 50 | 0.5 | 0.5 | –40 to +125 | Potentiometer mode | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN |
| MCP4012 | 64 | Volatile | 1 | Up/Down | 2.1, 5, 10, 50 | 0.5 | 0.5 | –40 to +125 | Rheostat mode | 6-pin SOT-23 |
| MCP4013 | 64 | Volatile | 1 | Up/Down | 2.1, 5, 10, 50 | 0.5 | 0.5 | –40 to +125 | Potentiometer to Vss | 6-pin SOT-23 |
| MCP4014 | 64 | Volatile | 1 | Up/Down | 2.1, 5, 10, 50 | 0.5 | 0.5 | –40 to +125 | Rheostat to Vss | 5-pin SOT-23 |
| MCP4017 | 128 | Volatile | 1 | I²C | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | 7-bit, Volatile, I²C digital potentiometer | 6-pin SC-70 |
| MCP4018 | 128 | Volatile | 1 | I²C | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | 7-bit, Volatile, I²C digital potentiometer | 6-pin SC-70 |
| MCP4019 | 128 | Volatile | 1 | I²C | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | 7-bit, Volatile, I²C digital potentiometer | 5-pin SC-70 |
| MCP40D17 | 128 | Volatile | 1 | I²C | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | 7-bit, Volatile, I²C digital potentiometer | 6-pin SC-70 |
| MCP40D18 | 128 | Volatile | 1 | I²C | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | 7-bit, Volatile, I²C digital potentiometer | 6-pin SC-70 |
| MCP40D19 | 128 | Volatile | 1 | I²C | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | 7-bit, Volatile, I²C digital potentiometer | 5-pin SC-70 |
| MCP4021 | 64 | Nonvolatile | 1 | Up/Down | 2.1, 5, 10, 50 | 0.5 | 0.5 | –40 to +125 | Potentiometer mode, Shutdown, WiperLock™ Technology | 8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN |
| MCP4022 | 64 | Nonvolatile | 1 | Up/Down | 2.1, 5, 10, 50 | 0.5 | 0.5 | –40 to +125 | Rheostat mode, Shutdown, WiperLock Technology | 6-pin SOT-23 |
| MCP4023 | 64 | Nonvolatile | 1 | Up/Down | 2.1, 5, 10, 50 | 0.5 | 0.5 | –40 to +125 | Potentiometer to Vss, WiperLock Technology | 6-pin SOT-23 |
| MCP4024 | 64 | Nonvolatile | 1 | Up/Down | 2.1, 5, 10, 50 | 0.5 | 0.5 | –40 to +125 | Rheostat to Vss, Shutdown, WiperLock Technology | 5-pin SOT-23 |
| MCP4141 | 128 | Nonvolatile | 1 | SPI | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | Potentiometer mode, Shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN |
| MCP4142 | 128 | Nonvolatile | 1 | SPI | 5, 10, 50, 100 | 0.8 | 0.25 | –40 to +125 | Rheostat mode, Shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN |
| MCP4241 | 128 | Nonvolatile | 2 | SPI | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | Potentiometer mode, Shutdown, WiperLock Technology | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin 4 × 4 QFN |
| MCP4242 | 128 | Nonvolatile | 2 | SPI | 5, 10, 50, 100 | 0.8 | 0.25 | –40 to +125 | Rheostat mode, Shutdown | 10-pin MSOP, 10-pin 3 × 3 DFN |
| MCP4131 | 129 | Volatile | 1 | SPI | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | Potentiometer mode, Shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN |
| MCP41HV31 | 128 | Volatile | 1 | SPI | 5, 10, 50, 100 | 0.5 | 0.125 | –40 to +125 | 7-bit Volatile digital potentiometer with specified operation from 10V to 36V and SPI interface | 14-pin TSSOP, 5 × 5 QFN |
| MCP4132 | 129 | Volatile | 1 | SPI | 5, 10, 50, 100 | 0.8 | 0.25 | –40 to +125 | Rheostat mode, Shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN |
| MCP4231 | 128 | Volatile | 2 | SPI | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | Potentiometer mode, Shutdown, WiperLock Technology | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin 4 × 4 QFN |
| MCP4232 | 128 | Volatile | 2 | SPI | 5, 10, 50, 100 | 0.8 | 0.25 | –40 to +125 | Rheostat mode, Shutdown | 10-pin MSOP, 10-pin 3 × 3 DFN |
| MCP41010 | 256 | Volatile | 1 | SPI | 10 | 1 | 1 | –40 to +85 | Potentiometer mode, Shutdown | 8-pin PDIP, 8-pin SOIC |
| MCP41050 | 256 | Volatile | 1 | SPI | 50 | 1 | 1 | –40 to +85 | Potentiometer mode, Shutdown | 8-pin PDIP, 8-pin SOIC |
| MCP41100 | 256 | Volatile | 1 | SPI | 100 | 1 | 1 | –40 to +85 | Potentiometer mode, Shutdown | 8-pin PDIP, 8-pin SOIC |
| MCP4151 | 256 | Volatile | 1 | SPI | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Potentiometer mode, Shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN |
| MCP41HV51 | 256 | Volatile | 1 | SPI | 5, 10, 50, 100 | 1 | 0.25 | –40 to +125 | 8-bit Volatile digital potentiomer with specified operation from 10V to 36V and SPI interface. | 14-pin TSSOP, 5 × 5 QFN |
| MCP4152 | 256 | Volatile | 1 | SPI | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Rheostat mode, Shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN |
| MCP4161 | 256 | Nonvolatile | 1 | SPI | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Potentiometer mode, Shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN |
| MCP4162 | 256 | Nonvolatile | 1 | SPI | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Rheostat mode, Shutdown | 8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN |
| MCP42010 | 256 | Volatile | 2 | SPI | 10 | 1 | 1 | –40 to +85 | Potentiometer mode, Shutdown | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP42100 | 256 | Volatile | 2 | SPI | 100 | 1 | 1 | –40 to +85 | Potentiometer mode, Shutdown | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP |
| MCP4251 | 256 | Volatile | 2 | SPI | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Potentiometer mode, Shutdown, WiperLock Technology | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin 4 × 4 QFN |
| MCP4252 | 256 | Volatile | 2 | SPI | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Rheostat mode, Shutdown | 10-pin MSOP, 10-pin 3 × 3 DFN |
| MCP4261 | 256 | Nonvolatile | 2 | SPI | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Potentiometer mode, Shutdown, WiperLock Technology | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin 4 × 4 QFN |
| MCP4262 | 256 | Nonvolatile | 2 | SPI | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Rheostat mode, Shutdown | 10-pin MSOP, 10-pin 3 × 3 DFN |
| MCP4341 | 129 | Nonvolatile | 4 | SPI | 5, 10, 50, 100 | 0.8 | 0.375 | –40 to +125 | 7-bit, Volatile potentiometer with an SPI interface | 20-pin TSSOP, 20-pin 4 × 4 QFN |
| MCP4342 | 129 | Nonvolatile | 4 | SPI | 5, 10, 50, 100 | 0.8 | 0.375 | –40 to +125 | 7-bit, Volatile rheostat with an SPI interface | 14-pin TSSOP |
| MCP4361 | 257 | Nonvolatile | 4 | SPI | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | 8-bit, Non-volatile potentiometer with an SPI interface | 20-pin TSSOP, 20-pin 4 × 4 QFN |
| MCP4362 | 257 | Nonvolatile | 4 | SPI | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | 8-bit, Non-volatile rheostat with an SPI interface | 14-pin TSSOP |
| MCP4331 | 129 | Volatile | 4 | SPI | 5, 10, 50, 100 | 0.8 | 0.375 | –40 to +125 | 7-bit, Volatile potentiometer with an SPI interface | 20-pin TSSOP, 20-pin 4 × 4 QFN |
| MCP4332 | 129 | Volatile | 4 | SPI | 5, 10, 50, 100 | 0.8 | 0.5 | –40 to +125 | 7-bit, Volatile rheostat with an SPI interface | 14-pin TSSOP |
| MCP4351 | 257 | Volatile | 4 | SPI | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | 8-bit, Non-volatile potentiometer with an SPI interface | 20-pin TSSOP, 20-pin 4 × 4 QFN |
| MCP4352 | 257 | Volatile | 4 | SPI | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | 8-bit, Non-volatile rheostat with an SPI interface | 14-pin TSSOP |

## MIXED SIGNAL: Digital Potentiometers

| Part # | # of Taps | Memory | # Per Package | Interface | Resistance (kOhms) | INL (Max) | DNL (Max) | Temperature Range (°C) | Comments | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP4441 | 129 | Nonvolatile | 4 | I²C | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | Potentiometer mode, WiperLock™ Technology | 20-pin TSSOP, 20-pin 4 × 4 QFN |
| MCP4442 | 129 | Nonvolatile | 4 | I²C | 5, 10, 50, 100 | 0.8 | 0.375 | –40 to +125 | Rheostat mode, WiperLock Technology | 14-pin TSSOP |
| MCP4461 | 257 | Nonvolatile | 4 | I²C | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Potentiometer mode, WiperLock Technology | 8-pin MSOP |
| MCP4462 | 257 | Nonvolatile | 4 | I²C | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Rheostat mode, WiperLock Technology | 14-pin TSSOP, 5 × 5 DFN |
| MCP4531 | 128 | Volatile | 1 | I²C | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | Potentiometer mode | 14-pin TSSOP, 5 × 5 DFN |
| MCP45HV31 | 128 | Volatile | 1 | I²C | 5, 10, 50, 100 | 0.5 | 0.125 | –40 to +125 | 7-bit volatile digital potentiometer with specified operation from 10V to 36V and I²C interface | 14-pin TSSOP, 16-pin 4 × 4 QFN |
| MCP45HV51 | 256 | Volatile | 1 | I²C | 5, 10, 50, 100 | 1 | 0.25 | –40 to +125 | 7-bit volatile digital potentiometer with specified operation from 10V to 36V and I²C interface | 8-pin MSOP |
| MCP4631 | 128 | Volatile | 2 | I²C | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | Potentiometer mode | 14-pin TSSOP, 16-pin 4x4 QFN |
| MCP4541 | 128 | Nonvolatile | 1 | I²C | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | Potentiometer mode, WiperLock Technology | 8-pin MSOP |
| MCP4641 | 128 | Nonvolatile | 2 | I²C | 5, 10, 50, 100 | 0.5 | 0.25 | –40 to +125 | Potentiometer mode, WiperLock Technology | 14-pin TSSOP, 16-pin 4x4 QFN |
| MCP4651 | 256 | Volatile | 2 | I²C | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Potentiometer mode | 14-pin TSSOP, 16-pin 4 × 4 QFN |
| MCP4561 | 256 | Nonvolatile | 1 | I²C | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Potentiometer mode, WiperLock Technology | 8-pin MSOP |
| MCP4661 | 256 | Nonvolatile | 2 | I²C | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Potentiometer mode, WiperLock Technology | 14-pin TSSOP, 16-pin 4 × 4 QFN |
| MCP4532 | 128 | Nonvolatile | 1 | I²C | 5, 10, 50, 100 | 0.8 | 0.375 | –40 to +125 | Rheostat mode | 8-pin MSOP, 8-pin 3 × 3 DFN |
| MCP4632 | 128 | Volatile | 2 | I²C | 5, 10, 50, 100 | 0.8 | 0.375 | –40 to +125 | Rheostat mode | 10-pin MSOP, 10-pin 3 × 3 DFN |
| MCP4542 | 128 | Nonvolatile | 1 | I²C | 5, 10, 50, 100 | 0.8 | 0.375 | –40 to +125 | Rheostat mode, WiperLock Technology | 8-pin MSOP, 8-pin 3 × 3 DFN |
| MCP4552 | 256 | Volatile | 1 | I²C | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Rheostat mode | 8-pin MSOP, 8-pin 3 × 3 DFN |
| MCP4652 | 256 | Nonvolatile | 2 | I²C | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Rheostat mode | 10-pin MSOP, 10-pin 3 × 3 DFN |
| MCP4562 | 256 | Nonvolatile | 1 | I²C | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Rheostat mode, WiperLock Technology | 8-pin MSOP, 8-pin 3 × 3 DFN |
| MCP4662 | 256 | Nonvolatile | 2 | I²C | 5, 10, 50, 100 | 1 | 0.5 | –40 to +125 | Rheostat mode, WiperLock Technology | 10-pin MSOP, 10-pin 3 × 3 DFN |

## MIXED SIGNAL: Frequency-to-Voltage/Voltage-to-Frequency Converters

| Part # | Frequency Range (kHz) | Full Scale (ppm FS/°C) | Non-linearity (%FS) | Temperature Range (°C) | Packages |
|---|---|---|---|---|---|
| TC9400 | 100 | ±40 | ±0.05 | –40 to +85 | 14-pin PDIP, 14-pin SOIC |
| TC9401 | 100 | ±40 | ±0.02 | –40 to +85 | 14-pin PDIP, 14-pin SOIC |
| TC9402 | 100 | ±100 | ±0.25 | –40 to +85 | 14-pin PDIP, 14-pin SOIC |

## MIXED SIGNAL: D/A Converters

| Part # | Resolution (Bits) | DAC Channels | Interface | Memory | Voltage Reference | Output Setting Time (µs) | DNL (LSB) | INL (LSB) | Max Operating Current (µA) | Temperature Range (°C) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MCP47CMB01 | 8 | 1 | I²C | MTP | $V_{DD}$, Ext, Int | 16 | 0.1 | 0.1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP47CMB02 | 8 | 2 | I²C | MTP | $V_{DD}$, Ext, Int | 16 | 0.1 | 0.1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP47CMB11 | 10 | 1 | I²C | MTP | $V_{DD}$, Ext, Int | 16 | 0.25 | 0.25 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP47CMB12 | 10 | 2 | I²C | MTP | $V_{DD}$, Ext, Int | 16 | 0.25 | 0.25 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP47CMB21 | 12 | 1 | I²C | MTP | $V_{DD}$, Ext, Int | 16 | 0.1 | 0.1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP47CMB22 | 12 | 2 | I²C | MTP | $V_{DD}$, Ext, Int | 16 | 0.1 | 0.1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP47CVB01 | 8 | 1 | I²C | Volatile | $V_{DD}$, Ext, Int | 16 | 0.1 | 0.1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP47CVB02 | 8 | 2 | I²C | Volatile | $V_{DD}$, Ext, Int | 16 | 0.1 | 0.1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP47CVB11 | 10 | 1 | I²C | Volatile | $V_{DD}$, Ext, Int | 16 | ±0.25 | ±0.25 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP47CVB12 | 10 | 2 | I²C | Volatile | $V_{DD}$, Ext, Int | 16 | ±0.25 | ±0.25 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP47CVB21 | 12 | 1 | I²C | Volatile | $V_{DD}$, Ext, Int | 16 | 1 | 1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP47CVB22 | 12 | 2 | I²C | Volatile | $V_{DD}$, Ext, Int | 16 | 1 | 1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP48CMB01 | 8 | 1 | I²C | MTP | $V_{DD}$, Ext, Int | 16 | 0.1 | 0.1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP48CMB02 | 8 | 2 | I²C | MTP | $V_{DD}$, Ext, Int | 16 | 0.1 | 0.1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP48CMB11 | 10 | 1 | I²C | MTP | $V_{DD}$, Ext, Int | 16 | 0.25 | 0.25 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP48CMB12 | 10 | 2 | I²C | MTP | $V_{DD}$, Ext, Int | 16 | 0.25 | 0.25 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP48CMB21 | 12 | 1 | I²C | MTP | $V_{DD}$, Ext, Int | 16 | 1 | 1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP48CMB22 | 12 | 2 | I²C | MTP | $V_{DD}$, Ext, Int | 16 | 1 | 1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP48CVB01 | 8 | 1 | I²C | Volatile | $V_{DD}$, Ext, Int | 16 | 0.1 | 0.1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP48CVB02 | 8 | 2 | I²C | Volatile | $V_{DD}$, Ext, Int | 16 | 0.1 | 0.1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP48CVB11 | 10 | 1 | I²C | Volatile | $V_{DD}$, Ext, Int | 16 | 0.25 | 0.25 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |

## MIXED SIGNAL: D/A Converters

| Part # | Resolution (Bits) | DAC Channels | Interface | Memory | Voltage Reference | Output Setting Time (µs) | DNL (LSB) | INL (LSB) | Max Operating Current (µA) | Temperature Range (°C) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MCP48CVB12 | 10 | 2 | I²C | Volatile | $V_{DD}$, Ext, Int | 16 | 0.25 | 0.25 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP48CVB21 | 12 | 1 | I²C | Volatile | $V_{DD}$, Ext, Int | 16 | 1 | 1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP48CVB22 | 12 | 2 | I²C | Volatile | $V_{DD}$, Ext, Int | 16 | 1 | 1 | 700 | –40 to +125 | 10-pin 3 × 3 DFN, 16-pin 3 × 3 QFN, 10-pin MSOP |
| MCP48FEB01 | 8 | 1 | SPI | EEPROM | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 7.8 | 0.25 | 0.5 | 180 | –40 to +125 | 8-pin MSOP |
| MCP48FEB11 | 10 | 1 | SPI | EEPROM | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 7.8 | 0.5 | 1.5 | 180 | –40 to +125 | 8-pin MSOP |
| MCP48FEB21 | 12 | 1 | SPI | EEPROM | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 7.8 | 1 | 6 | 180 | –40 to +125 | 8-pin MSOP |
| MCP48FEB02 | 8 | 2 | SPI | EEPROM | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 7.8 | 0.25 | 0.5 | 380 | –40 to +125 | 8-pin MSOP |
| MCP48FEB12 | 10 | 2 | SPI | EEPROM | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 7.8 | 0.5 | 1.5 | 380 | –40 to +125 | 8-pin MSOP |
| MCP48FEB22 | 12 | 2 | SPI | EEPROM | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 7.8 | 1 | 6 | 380 | –40 to +125 | 8-pin MSOP |
| MCP48FVB01 | 8 | 1 | SPI | Volatile | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 7.8 | 0.25 | 0.5 | 180 | –40 to +125 | 8-pin MSOP |
| MCP48FVB11 | 10 | 1 | SPI | Volatile | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 7.8 | 0.5 | 1.5 | 180 | –40 to +125 | 8-pin MSOP |
| MCP48FVB21 | 12 | 1 | SPI | Volatile | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 7.8 | 1 | 6 | 180 | –40 to +125 | 8-pin MSOP |
| MCP48FVB02 | 8 | 2 | SPI | Volatile | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 7.8 | 0.25 | 0.5 | 380 | –40 to +125 | 8-pin MSOP |
| MCP48FVB12 | 10 | 2 | SPI | Volatile | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 7.8 | 0.5 | 1.5 | 380 | –40 to +125 | 8-pin MSOP |
| MCP48FVB22 | 12 | 2 | SPI | Volatile | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 7.8 | 1 | 6 | 380 | –40 to +125 | 8-pin MSOP |
| MCP47FEB01 | 8 | 1 | I²C | EEPROM | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 6 | 0.25 | 0.5 | 180 | –40 to +125 | 8-pin MSOP |
| MCP47FEB11 | 10 | 1 | I²C | EEPROM | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 6 | 0.5 | 1.5 | 180 | –40 to +125 | 8-pin MSOP |
| MCP47FEB21 | 12 | 1 | I²C | EEPROM | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 6 | 1 | 6 | 180 | –40 to +125 | 8-pin MSOP |
| MCP47FEB02 | 8 | 2 | I²C | EEPROM | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 6 | 0.25 | 0.5 | 380 | –40 to +125 | 8-pin MSOP |
| MCP47FEB12 | 10 | 2 | I²C | EEPROM | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 6 | 0.5 | 1.5 | 380 | –40 to +125 | 8-pin MSOP |
| MCP47FEB22 | 12 | 2 | I²C | EEPROM | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 6 | 1 | 6 | 380 | –40 to +125 | 8-pin MSOP |
| MCP47FVB01 | 8 | 1 | I²C | Volatile | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 6 | 0.25 | 0.5 | 180 | –40 to +125 | 8-pin MSOP |
| MCP47FVB11 | 10 | 1 | I²C | Volatile | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 6 | 0.5 | 1.5 | 180 | –40 to +125 | 8-pin MSOP |
| MCP47FVB21 | 12 | 1 | I²C | Volatile | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 6 | 1 | 6 | 180 | –40 to +125 | 8-pin MSOP |
| MCP47FVB02 | 8 | 2 | I²C | Volatile | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 6 | 0.25 | 0.5 | 380 | –40 to +125 | 8-pin MSOP |
| MCP47FVB12 | 10 | 2 | I²C | Volatile | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 6 | 0.25 | 1.5 | 380 | –40 to +125 | 8-pin MSOP |
| MCP47FVB22 | 12 | 2 | I²C | Volatile | $V_{DD}$, $V_{REF}$, $V_{BG}$ | 6 | 1 | 6 | 380 | –40 to +125 | 8-pin MSOP |
| MCP47DA1 | 6 | 1 | I²C | Volatile | $V_{REF}$ | 6 | 0.35 | 0.7 | 160 | –40 to +125 | 6-pin SOT23, 6-pin SC70 |
| MCP4706 | 8 | 1 | I²C | EEPROM | $V_{DD}$, $V_{REF}$ | 6 | 0.05 | 0.907 | 400 | –40 to +125 | 6-pin SOT23, 6-pin 2 × 2 DFN |
| MCP4716 | 10 | 1 | I²C | EEPROM | $V_{DD}$, $V_{REF}$ | 6 | 0.188 | 3.625 | 400 | –40 to +125 | 6-pin SOT23, 6-pin 2 × 2 DFN |
| MCP4726 | 12 | 1 | I²C | EEPROM | $V_{DD}$, $V_{REF}$ | 6 | 0.75 | 14.5 | 400 | –40 to +125 | 6-pin SOT23, 6-pin 2 × 2 DFN |
| MCP4725 | 12 | 1 | I²C | EEPROM | $V_{DD}$ | 6 | 0.75 | 14.5 | 400 | –40 to +125 | 6-pin SOT23 |
| MCP4728 | 12 | 4 | I²C | EEPROM | $V_{DD}$, $V_{BG}$ | 6 | 0.75 | 13 | 1400 | –40 to +125 | 10-pin MSOP |
| MCP4801 | 8 | 1 | SPI | Volatile | $V_{BG}$ | 4.5 | 0.5 | 1 | 400 | –40 to +125 | 8-pin MSOP, 8-pin 2 × 3 DFN, 8-pin SOIC, 8-pin PDIP |
| MCP4811 | 10 | 1 | SPI | Volatile | $V_{BG}$ | 4.5 | 0.5 | 3.5 | 400 | –40 to +125 | 8-pin MSOP, 8-pin 2 × 3 DFN, 8-pin SOIC, 8-pin PDIP |
| MCP4821 | 12 | 1 | SPI | Volatile | $V_{BG}$ | 4.5 | 0.75 | 12 | 400 | –40 to +125 | 8-pin MSOP, 8-pin 2 × 3 DFN, 8-pin SOIC, 8-pin PDIP |
| MCP4802 | 8 | 2 | SPI | Volatile | $V_{BG}$ | 4.5 | 0.5 | 1 | 400 | –40 to +125 | 8-pin MSOP, 8-pin 2 × 3 DFN, 8-pin SOIC, 8-pin PDIP |
| MCP4812 | 10 | 2 | SPI | Volatile | $V_{BG}$ | 4.5 | 0.5 | 3.5 | 400 | –40 to +125 | 8-pin MSOP, 8-pin 2 × 3 DFN, 8-pin SOIC, 8-pin PDIP |
| MCP4822 | 12 | 2 | SPI | Volatile | $V_{BG}$ | 4.5 | 0.75 | 12 | 400 | –40 to +125 | 8-pin MSOP, 8-pin 2 × 3 DFN, 8-pin SOIC, 8-pin PDIP |
| MCP4901 | 8 | 1 | SPI | Volatile | $V_{BG}$ | 4.5 | 0.5 | 1 | 350 | –40 to +125 | 8-pin MSOP, 8-pin 2 × 3 DFN, 8-pin SOIC, 8-pin PDIP |
| MCP4911 | 10 | 1 | SPI | Volatile | $V_{BG}$ | 4.5 | 0.5 | 3.5 | 350 | –40 to +125 | 8-pin MSOP, 8-pin 2 × 3 DFN, 8-pin SOIC, 8-pin PDIP |
| MCP4921 | 12 | 1 | SPI | Volatile | $V_{BG}$ | 4.5 | 0.75 | 12 | 350 | –40 to +125 | 8-pin MSOP, 8-pin 2 × 3 DFN, 8-pin SOIC, 8-pin PDIP |
| MCP4902 | 8 | 2 | SPI | Volatile | $V_{BG}$ | 4.5 | 0.5 | 1 | 350 | –40 to +125 | 8-pin MSOP, 8-pin 2 × 3 DFN, 8-pin SOIC, 8-pin PDIP |
| MCP4912 | 10 | 2 | SPI | Volatile | $V_{BG}$ | 4.5 | 0.5 | 3.5 | 350 | –40 to +125 | 8-pin MSOP, 8-pin 2 × 3 DFN, 8-pin SOIC, 8-pin PDIP |
| MCP4922 | 12 | 2 | SPI | Volatile | $V_{BG}$ | 4.5 | 0.75 | 12 | 350 | –40 to +125 | 8-pin MSOP, 8-pin 2 × 3 DFN, 8-pin SOIC, 8-pin PDIP |

# INTERFACE AND NETWORKING

## INTERFACE AND NETWORKING: CAN Products

| Part # | Description and Features | Operating Voltage (V) | Temperature Range (°C) | Tx Buffers | Rx Buffers | Filters | Masks | Interrupt Output | Packages |
|---|---|---|---|---|---|---|---|---|---|
| ATA6560 | CAN Transceiver with stand-by and silent mode, 5V I/O, CAN FD ready, 5 Mbps, AECQ100 Grade 1 | 4.5 to 5.5 | –40 to +125 | N/A | N/A | N/A | N/A | N/A | 8-pin DFN, 8-pin SOIC |
| ATA6561 | CAN Transceiver with stand-by mode, compatible with 3.3V and 5V microcontroller, CAN FD ready, 5 Mbps, AECQ100 Grade 1 | 4.5 to 5.5 | –40 to +125 | N/A | N/A | N/A | N/A | N/A | 8-pin DFN, 8-pin SOIC |
| ATA6562 | CAN Transceiver with stand-by and silent mode, 5V I/O, wake up pattern, CAN FD ready, 5 Mbps, AECQ100 Grade 0, 1 | 4.5 to 5.5 | –40 to +125/+150 | N/A | N/A | N/A | N/A | N/A | 8-pin DFN, 8-pin SOIC |
| ATA6563 | CAN Transceiver with stand-by mode, compatible with 3.3V and 5V microcontroller, wake up pattern, CAN FD ready, 5 Mbps, AECQ100 Grade 0, 1 | 4.5 to 5.5 | –40 to +125/+150 | N/A | N/A | N/A | N/A | N/A | 8-pin DFN, 8-pin SOIC |
| ATA6564 | CAN Transceiver with silent mode, compatible with 3.3V and 5V microcontroller, CAN FD ready, 5 Mbps, AECQ100 Grade 0, 1 | 4.5 to 5.5 | –40 to +125/+150 | N/A | N/A | N/A | N/A | N/A | 8-pin DFN, 8-pin SOIC |
| ATA6565 | Dual CAN Transceiver with stand-by mode, 5V I/O, wake up pattern, CAN FD ready, 5 Mbps, AECQ100 Grade 0, 1 | 4.5 to 5.5 | –40 to +125/+150 | N/A | N/A | N/A | N/A | N/A | 14-pin DFN, 14-pin SOIC |
| ATA6566 | CAN Transceiver with stand-by mode, compatible with 3.3V and 5V microcontroller, CAN FD ready, 2 Mbps, AECQ100 Grade 0, 1, suitable for the Japanese market | 4.5 to 5.5 | –40 to +125/+150 | N/A | N/A | N/A | N/A | N/A | 8-pin DFN, 8-pin SOIC |
| ATA6570 | CAN Partial Networking Transceiver with Wake pin and Window Watchdog, compatible with 3.3V and 5V microcontroller, wake up frame, CAN FD ready, 5 Mbps, AECQ100 Grade 0, 1 | 4.55 to 28 | –40 to +125/+150 | N/A | N/A | N/A | N/A | N/A | 14-pin SOIC |
| MCP2515 | External CAN 2.0B Controller with SPI Interface | 2.7 to 5.5 | –40 to +125 | 3 | 2 | 6 | 2 | Yes | 18-pin PDIP, 18-pin SOIC, 20-pin TSSOP |
| MCP2517FD | External CAN FD Controller with SPI Interface, ISO 11898-1:2015 Compliant, 32-bit Time Stamp, Supports CAN 2.0B and CAN FD, Highly Configurable 31 FIFOs and 32 Filters | 2.7 to 5.5 | –40 to +150 | Up to 32 | Up to 32 | 32 | 32 | 1 to 3 | 14-pin SOIC, 14-pin VDFN |
| MCP2518FD | External CAN FD Controller with SPI Interface, ISO 11898-1:2015 Compliant, 32-bit Time Stamp, Supports CAN 2.0B and CAN FD, Highly Configurable 31 FIFOs and 32 Filters | 2.7 to 5.5 | –40 to +150 | Up to 32 | Up to 32 | 32 | 32 | 1 to 3 | 14-pin SOIC, 14-pin VDFN |
| MCP25625 | Integrated High-Speed CAN Transceiver and CAN 2.0B Controller | 2.7 to 5.5 | –40 to +125 | 3 | 2 | 6 | 2 | 1 | 28-pin SSOP, 28-pin 6 × 6 QFN |

## INTERFACE AND NETWORKING: LIN Products

| Part # | Description | $V_{REG}$ Output Voltage (V) | Operating Temp. Range (°C) | $V_{REG}$ Output Current (mA) | Supply Voltage Range (V) | Max Baud Rate | LIN Specification Supported | Packages |
|---|---|---|---|---|---|---|---|---|
| ATA663211 | LIN Transceiver | – | –40 to +125 | – | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 8-pin DFN, SO8 |
| ATA6625 | LIN Transceiver with integrated $V_{REG}$ | 5.0 | –40 to +125 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 8-pin DFN, SO8 |
| ATA663201 | LDO, pin compatible with ATA663231 LIN SBC | 3.3 | –40 to +125 | 85 | 5 to 28 | – | – | 8-pin DFN |
| ATA663203 | LDO, pin compatible with ATA663254 LIN SBC | 5.0 | –40 to +125 | 85 | 5 to 28 | – | – | 8-pin DFN |
| ATA663231 | LIN Transceiver with integrated $V_{REG}$ | 3.3 | –40 to +125 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 8-pin DFN |
| ATA663232 | LIN Transceiver with integrated $V_{REG}$ and Wake Pin | 3.3 | –40 to +125 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 8-pin DFN |
| ATA663254 | LIN Transceiver with integrated $V_{REG}$ | 5.0 | –40 to +125 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 8-pin DFN, SO8 |
| ATA663255 | LIN Transceiver with integrated $V_{REG}$ and Wake Pin | 5.0 | –40 to +125 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 8-pin DFN |
| ATA663331 | LIN Transceiver with integrated $V_{REG}$ and 2 relay driver | 3.3 | –40 to +125 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 16-pin DFN |
| ATA663354 | LIN Transceiver with integrated $V_{REG}$ and 2 relay driver | 5.0 | –40 to +125 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 16-pin DFN |
| ATA663431 | LIN Transceiver with integrated $V_{REG}$, WWDT | 3.3 | –40 to +125 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 16-pin DFN |
| ATA663454 | LIN Transceiver with integrated $V_{REG}$, WWDT | 5.0 | –40 to +125 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 16-pin DFN |
| ATSAMHA1G16A-MBT-B | LIN SiP with $V_{REG}$, LIN TRX and uC, 64K Flash memory | 3.3 | –40 to +85 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 48-pin QFN |
| ATSAMHA1G15A-MBT-B | LIN SiP with $V_{REG}$, LIN TRX and uC, 32K Flash memory | 3.3 | –40 to +85 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 48-pin QFN |
| ATSAMHA1G14A-MBT-B | LIN SiP with $V_{REG}$, LIN TRX and uC, 16K Flash memory | 3.3 | –40 to +85 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 48-pin QFN |
| ATSAMHA0G16A-MBT-B | LIN SiP with $V_{REG}$, LIN TRX and uC, 64K Flash memory | 3.3 | –40 to +105 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 48-pin QFN |
| ATSAMHA0G15A-MBT-B | LIN SiP with $V_{REG}$, LIN TRX and uC, 32K Flash memory | 3.3 | –40 to +105 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 48-pin QFN |
| ATSAMHA0G14A-MBT-B | LIN SiP with $V_{REG}$, LIN TRX and uC, 16K Flash memory | 3.3 | –40 to +105 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 48-pin QFN |
| ATSAMHA1E16A-MBT-B | LIN SiP with $V_{REG}$, LIN TRX and uC, 64K Flash memory | 3.3 | –40 to +85 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 32-pin QFN |
| ATSAMHA1E15A-MBT-B | LIN SiP with $V_{REG}$, LIN TRX and uC, 32K Flash memory | 3.3 | –40 to +85 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 32-pin QFN |
| ATSAMHA1E14A-MBT-B | LIN SiP with $V_{REG}$, LIN TRX and uC, 16K Flash memory | 3.3 | –40 to +85 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 32-pin QFN |
| ATSAMHA0E16A-MBT-B | LIN SiP with $V_{REG}$, LIN TRX and uC, 64K Flash memory | 3.3 | –40 to +105 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 32-pin QFN |
| ATSAMHA0E15A-MBT-B | LIN SiP with $V_{REG}$, LIN TRX and uC, 32K Flash memory | 3.3 | –40 to +105 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 32-pin QFN |
| ATSAMHA0E14A-MBT-B | LIN SiP with $V_{REG}$, LIN TRX and uC, 16K Flash memory | 3.3 | –40 to +105 | 85 | 5 to 28 | 20 kbaud | 2.0, 2.1, 2.2, 2.2A, SAEJ2602-2 | 32-pin QFN |

## INTERFACE AND NETWORKING: Ethernet products

| Product | Bandwidth | Interface (Upstream) | Wake-On-LAN | EEE | Temperature* | Packages |
|---|---|---|---|---|---|---|
| **Ethernet Controllers** | | | | | | |
| ENC28J60 | 10 | SPI | – | – | I | 28-pin SPDIP, SSOP, SOIC, QFN |
| ENC624J600 | 10/100 | SPI/Parallel | – | – | I | 24-pin TQFN, QFN, 64-pin TQFN |
| LAN9217 | 10/100 | 16-bit Host Bus/MII | – | – | – | 100-pin TQFP |
| LAN9218 | 10/100 | 32-bit Host Bus | – | – | I | 100-pin TQFP |
| LAN9220/1 | 10/100 | 16-bit Host Bus | – | – | I | 56-pin QFN |
| LAN9250 | 10/100 | SPI, SQI™, HBI | ✓ | ✓ | I | 64-pin QFN, 64-pin TQFP-EP |
| LAN9420 | 10/100 | 32-bit PCI 3.0 | – | – | I | 128-pin VTQFP |
| LAN89218 | 10/100 | 32-bit Host Bus | – | – | A, I | 100-pin TQFP |
| KSZ8851 | 10/100 | 8-/16-/32-bit or SPI | ✓ | – | A, I | 32-pin QFN, 48-pin LQFP, 128-pin PQFP |
| KSZ8852 | 10/100 | 8-/16-/32-bit | ✓ | ✓ | I | 64-pin LQFP |
| KSZ8441 | 10/100 | 8-/16-/32-bit or SPI | ✓ | ✓ | I | 64-pin LQFP |
| **Ethernet Bridges** | | | | | | |
| LAN9500A | 10/100 | USB 2.0 | ✓ | – | I | 56-pin QFN |
| LAN9730 | 10/100 | USB 2.0 (HSIC)/MII | – | – | I | 56-pin QFN |
| LAN9512/13/14 | 10/100 | USB 2.0 | – | – | I | 64-pin QFN |
| LAN89530 | 10/100 | USB 2.0 | ✓ | – | A, I | 56-pin QFN |
| LAN89730 | 10/100 | HSIC | ✓ | – | I | 56-pin QFN |
| LAN7430 | Gigabit | PCIe 3.1 | ✓ | ✓ | I | 48-pin VQFN |
| LAN7431 | Gigabit | PCIe 3.1 RGMII | – | ✓ | A | 72-pin VQFN |
| LAN7500 | Gigabit | USB 2.0 | ✓ | – | I | 56-pin QFN |
| LAN7800/01/50 | Gigabit | USB 3.1/USB 2.0/HSIC | ✓ | ✓ | A, I | 48-pin SQFN, 64-pin SQFN, 66-pin SQFN |
| **Ethernet Transceivers (PHYs)** | | | | | | |
| KSZ9031 | Gigabit | MII/RMII/RGMII | ✓ | – | A, I | 48-/64-pin QFN |
| LAN8810 | Gigabit | GMII | – | – | I | 72-pin QFN |
| LAN8820 | Gigabit | RGMII | – | – | I | 56-pin QFN |
| KSZ8061 | 10/100 | MII/RMII | ✓ | ✓ | A, I | 32-/48-pin QFN |
| KSZ8081 | 10/100 | MII/RMII | – | – | I | 24-/32-pin QFN, 48-pin LQFP |
| KSZ8091 | 10/100 | MII/RMII | ✓ | ✓ | I | 24-/32-pin QFN, 48-pin LQFP |
| KSZ8051 | 10/100 | MII/RMII | – | – | A, I | 32-pin QFN |
| LAN8710A | 10/100 | MII/RMII | – | – | I | 32-pin QFN |
| LAN8720A | 10/100 | RMII | – | – | I | 24-pin QFN |
| LAN8740A | 10/100 | MII/RMII | ✓ | ✓ | I | 32-pin QFN |
| LAN8741A | 10/100 | MII/RMII | – | ✓ | I | 32-pin QFN |
| LAN8742A | 10/100 | RMII | ✓ | – | I | 24-pin QFN |
| LAN88730 | 10/100 | MII/RMII | – | – | A, I | 32-pin QFN |

## INTERFACE AND NETWORKING: Ethernet products

| Product | Bandwidth | Ports | Interface (Upstream) | 1588–v2 | Cable Diags | 100 Fx | Temperature* | Packages |
|---|---|---|---|---|---|---|---|---|
| **EtherCAT® Controllers** | | | | | | | | |
| LAN9252 | 10/100 | 2/3 | SPI, SQI™, 8-/16-/32-bit host bus | Clock Sync. | ✓ | ✓ | I | 64-pin QFN, 64-pin TQFP-EP |

## INTERFACE AND NETWORKING: Ethernet products

| Product | Bandwidth | Ports | Interface (Upstream) | 1588–v2 | Cable Diags | 100 Fx | Temperature* | Packages |
|---|---|---|---|---|---|---|---|---|
| **Ethernet Switches** | | | | | | | | |
| LAN9352 | 10/100 | 2 | SPI/SQI/HBI | ✓ | ✓ | – | I | 72-pin QFN, 80-pin TQFP-EP |
| LAN9303 | 10/100 | 3 | MII/RMII/Turbo MII | – | – | ✓ | I | 56-pin QFN, 72-pin QFN |
| LAN89303 | 10/100 | 3 | MII/RMII/Turbo MII | – | – | ✓ | A, I | 56-pin QFN |
| LAN9353 | 10/100 | 3 | MII/RMII/Turbo MII | ✓ | ✓ | ✓ | I | 64-pin QFN, 64-pin TQFP-EP |
| LAN9354 | 10/100 | 3 | RMII | ✓ | ✓ | ✓ | I | 56-pin QFN |
| LAN9355 | 10/100 | 3 | MII/RMII/Turbo MII | ✓ | ✓ | ✓ | I | 64-pin QFN, 64-pin TQFP-EP |
| KSZ8863 | 10/100 | 3 | MII/RMII | – | ✓ | ✓ | I | 48-pin LQFP |
| KSZ8873 | 10/100 | 3 | MII/RMII | – | ✓ | ✓ | A, I | 64-pin VQFN |
| KSZ8463 | 10/100 | 3 | MII/RMII | ✓ | ✓ | ✓ | I | 64-pin LQFP |
| KSZ8864 | 10/100 | 4 | MII/RMII | – | ✓ | – | A, I | 64-pin VQFN |
| KSZ8794 | 10/100 | 4 | MII/GMII/RGMII | – | ✓ | – | I | 64-pin VQFN |
| KSZ8795 | 10/100 | 5 | GMII/RGMII/MII/RMII | – | ✓ | – | I | 80-pin LQFP |
| KSZ8775 | 10/100 | 5 | MII/GMII/RGMII | – | ✓ | – | I | 80-pin LQFP |
| KSZ8765 | 10/100 | 5 | MII/GMII/RGMII | – | ✓ | ✓ | I | 64-pin QFN, 80-pin LQFP |
| KSZ8895 | 10/100 | 5 | MII/RMII | – | ✓ | – | I | 128-pin LQFP |
| KSZ8567 | 10/100 | 5, 7 | SGMII/RGMII/MII/RMII | ✓ | LinkMD®+ with signal quality indicator | with SGMII | A, I | 64-pin QFN, 128-pin LQFP |
| KSZ9563 | 10/100/1000 | 3 | RGMII/MII/RMII | ✓ | ✓ | – | I | 64-pin VQFN |
| KSZ9893 | 10/100/1000 | 3 | RGMII/MII/RMII | – | ✓ | – | I | 64-pin VQFN |
| KSZ8563 | 10/100 | 3 | RGMII/MII/RMII | ✓ | ✓ | – | I | 64-pin VQFN |
| KSZ9897 | 10/100/1000 | 6, 7 | SGMII/RGMII/MII/RMII | – | ✓ | with SGMII | I | 64-pin QFN, 128-pin LQFP |
| KSZ9567 | 10/100/1000 | 7 | SGMII/RGMII/MII/RMII | ✓ | LinkMD+ with signal quality indicator | with SGMII | I | 64-pin QFN, 128-pin LQFP |
| KSZ9477 | 10/100/1000 | 7 | SGMII/RGMII/MII/RMII | 1588 + HSR/ DLR | LinkMD+ with signal quality indicator | with SGMII | I | 128-pin LQFP |

Note: All products above are supported with 3.3V operating voltage *A = Automotive temperature range, (–40° to +105°C) I = Industrial temperature range (–40° to +85°C)

## INTERFACE AND NETWORKING: Serial Peripherals

| Part # | Description | Operating Voltage (V) | Operating Temp. Range (°C) | Bus Type | Max Bus Frequency (kHz) | Features | Packages |
|---|---|---|---|---|---|---|---|
| MCP23008 | 8-bit I/O Port Expander | 1.8 to 5.5 | –40 to +85 | I²C | 1700 | Three HW address pins, HW interrupt, 25 mA source/sink capability per I/O | 18-pin PDIP, 18-pin SOIC, 20-pin SSOP, 20-pin 4 × 4 QFN |
| MCP23S08 | 8-bit I/O Port Expander | 1.8 to 5.5 | –40 to +85 | SPI | 10000 | Two HW address pins, HW interrupt, 25 mA source/sink capability per I/O | 18-pin PDIP, 18-pin SOIC, 20-pin SSOP, 20-pin 4 × 4 QFN |
| MCP23009 | 8-bit I/O Port Expander | 1.8 to 5.5 | –40 to +125 | I²C | 3400 | One HW address pin, HW interrupt, 25 mA source/sink per I/O, 100 kHz, 400 kHz and 3.4 MHz I²C supported | 18-pin PDIP, 18-pin SOIC, 20-pin SSOP |
| MCP23S09 | 8-bit I/O Port Expander | 1.8 to 5.5 | –40 to +125 | SPI | 10000 | HW interrupt, 25 mA source/sink per I/O | 18-pin PDIP, 18-pin SOIC |
| MCP23016 | 16-bit I/O Port Expander | 2.0 to 5.5 | –40 to +85 | I²C | 400 | Three HW address inputs, HW interrupt, 25 mA source/sink capability per I/O | 28-pin PDIP, 28-pin SOIC, 28-pin SSOP, 28-pin 6 × 6 QFN |
| MCP23017 | 16-bit I/O Expander | 1.8 to 5.5 | –40 to +125 | I²C | 1700 | Three HW address pins, 25 mA sink/source per I/O, 100 kHz, 400 kHz and 3-4 MHz I²C supported, Interrupt output | 28-pin PDIP, 28-pin SOIC, 28-pin SSOP, 28-pin QFN |
| MCP23S17 | 16-bit I/O Expander | 1.8 to 5.5 | –40 to +125 | SPI | 10000 | Three HW address pins, 25 mA sink/source per I/O, Interrupt output | 28-pin PDIP, 28-pin SOIC, 28-pin SSOP, 28-pin QFN |
| MCP23018 | 16-bit I/O Port Expander | 1.8 to 5.5 | –40 to +125 | I²C | 3400 | One HW address pin, 2 HW interrupts, 25 mA source/sink per I/O, 100 kHz, 400 kHz and 3.4 MHz I²C supported | 24-pin SSOP, 28-pin SOIC, 28-pin SDIP |
| MCP23S18 | 16-bit I/O Port Expander | 1.8 to 5.5 | –40 to +125 | SPI | 10000 | Two HW interrupts, 25 mA source/sink per I/O | 28-pin SOIC, 28-pin SDIP |

## INTERFACE AND NETWORKING: Wi-Fi® Modules

| Part # | Radio | Pin Count | Antenna | Frequency Range (GHz) | Sensitivity (dBm) | Power Output (dBm) | Power Consumption (mA) | | Sleep | MAC Features | Protocols | Encryption | Interface | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tx | Rx | | | | | | |
| MRF24WG0MA | 802.11 b/g | 36 | PCB | 2.412–2.484 | –95 | +18 | 240 | 156 | 0.1 mA[1] | 802.11b/g, Wi-Fi Direct, SoftAP, WPS | Wi-Fi Connection Manager, Announce, DNS, DDNS, DHCP, FTP, HTTP, NBNS, SNMP, SNTP, SSL, TCP, UDP, ZeroConf[2] | WPA2-PSK, WPA-PSK, WEP, WPA-2-ENTERPRISE | 4-wire SPI | 36/Module (21.0 × 31.0 mm) |
| WINC1500-MR210PB | 802.11 b/g/n | 28 | PCB, U.FL | 2.412–2.472 | –94 | +18.5 | 250 | 57 | 380 µA | 802.11b/g/n, SoftAP, Wi-Fi Direct | TCP, UDP, DHCP, ARP, HTTP, SSL, DNS | WEP, WPA, WPA2 Security | SPI, UART, I²C | 28/module (21.5 × 14.5 mm) |

## INTERFACE AND NETWORKING: Wi-Fi® Modules

| Part # | Radio | Pin Count | Antenna | Frequency Range (GHz) | Sensitivity (dBm) | Power Output (dBm) | Power Consumption (mA) | | Sleep | MAC Features | Protocols | Encryption | Interface | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tx | Rx | | | | | | |
| SAMW25 | 802.11 b/g/n | 51 | – | 2.412–2.472 | –94 | +17 | 250 | 57 | 380 µA | 802.11b/g/n, SoftAP, Wi-Fi Direct, station mode | DHCP, DNS, TCP/IP (IPv4), UDP, HTTP, HTTPS | WEP, WPA/WPA2 Personal, TLS, SSL | SPI, UART | 51/module (33.86 × 14.88 mm) |

**Note 1:** Indicates "off" current **Note 2:** Supported in the provided stack

## INTERFACE AND NETWORKING: High-Linearity 2.4-GHz Amplifiers

| Part Number | Freq (GHz) | 802.11 Standard | Description | Gain (dB) | Linear Po (dBm) | EVM (%) | Vcc (V) | Current @ Po (mA) | Package (mm) |
|---|---|---|---|---|---|---|---|---|---|
| LX5511 | 2.3–2.5 | n | PA + PDET | 26.0 | 20 | 3.0 | 3.3 | 170 | 16-pin QFN, 3 × 3 × 0.9 |
| LX5535 | 2.4–2.5 | n | PA + PDET | 32.0 | 24.5 | 3.0 | 3.3–5 | 260 | 16-pin QFN, 3 × 3 × 0.9 |
| LX5518 | 2.4–2.5 | n | PA + PDET | 30.0 | 26 | 3.0 | 3.3–5 | 390 | 16-pin QFN, 3 × 3 × 0.9 |
| LX5602 | 2.4–2.5 | n | PA, Filtering, PDET | 30.0 | 26 | 3.0 | 5 | 440 | 16-pin QFN, 3 × 3 × 0.9 |
| LX5533 | 2.4–2.5 | ac | PA, Filtering, PDET | 30.0 | 24 | 1.8 | 5 | 380 | 16-pin QFN, 3 × 3 × 0.9 |

## INTERFACE AND NETWORKING: High-Linearity 5-GHz Amplifiers

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| LX5530 | 4.9–5.9 | n | PA + PDET | 28.0 | 22 | 3.0 | 3.3–5 | 360 | 16-pin QFN, 3 × 3 × 0.9 |
| LX5531 | 5.15–5.85 | n | PA, Filtering, PDET | 33.0 | 25 | 3.0 | 5 | 350 | 20-pin QFN, 4 × 4 × 0.9 |
| | | ac | | | 23 | 1.8 | 5 | 290 | |

## INTERFACE AND NETWORKING: Low-Noise Amplifiers

| Part Number | Freq (GHz) | 802.11 Standard | Description | Gain (dB) | Noise Figure (dB) | IIP3 (dBm) | Current @ Po (mA) | Vcc (V) | Package (mm) |
|---|---|---|---|---|---|---|---|---|---|
| LX5561 | 2.4–2.5 | b/g/n/ac | LNA | 13 | 1.5 | 6.5 | 10.5 | 3.3 | 12-pin QFN, 2 × 2 × 0.5 |
| LX5560 | 4.9–6.0 | a/n/ac | LNA | 12 | 1.7 | 6 | 9.5 | 3.3 | 12-pin QFN, 2 × 2 × 0.5 |
| LX5563 | 2.4–2.5 | b/g/n/ac | LNA + Bypass | 14 | 1.3 | 7.5 | 9 | 3.3 | 6-pin DFN, 1.5 × 1.5 × 0.5 |
| LX5575 | 5.15–5.85 | a/n/ac | LNA + Bypass | 12 | 1.7 | 12 | 9 | 3.3–5 | 16-pin QFN, 2.5 × 2.5 × 0.45 |

## INTERFACE AND NETWORKING: Dual-Band Front-End Modules

| Part Number | Freq (GHz) | 802.11 Standard | Description | Gain (dB) | Linear Po (dBm) | EVM (%) | Vcc (V) | Current @ Po (mA) | Package (mm) |
|---|---|---|---|---|---|---|---|---|---|
| LX5591 | 2.4–2.5 | n | Dual-Band PA + PDET + LNA with Bypass + SPDT | 30 | 18 | 3.0 | 3.3 | 210 | QFN-28, 4×3×0.9 |
| | | ac | | | 16 | 1.8 | | 190 | |
| | 5.15–5.85 | n | | 27 | 18 | 3.0 | 3.3 | 260 | |
| | | ac | | | 16 | 1.8 | | 230 | |

## INTERFACE AND NETWORKING: Single-Band, High-Linearity Front-End Modules

| Part Number | Freq (GHz) | 802.11 Standard | Description | Gain (dB) | Linear Po (dBm) | EVM (%) | Vcc (V) | Current @ Po (mA) | Package (mm) |
|---|---|---|---|---|---|---|---|---|---|
| LX5551 | 2.4–2.5 | n | PA + SPDT + PDET | 27 | 18 | 3.0 | 3.3 | 140 | QFN-16, 3×3×0.9 |
| LX5584A | 2.4–2.5 | n | PA + Log DET + LNA with bypass + SP3T | 30 | 19 | 3.0 | 3.3 | 220 | QFN-16, 3×3×0.9 |
| | | ac | | | 18 | 1.8 | 3.3 | 200 | |
| LX5584B | 2.4–2.5 | n | PA + Log DET + LNA with Bypass + SP3T | 33 | 21 | 3.0 | 5.0 | 260 | QFN-16, 3×3×0.9 |
| | | ac | | | 20 | 1.8 | 5.0 | 240 | |
| LX5584H | 2.4–2.5 | n | PA + Log DET + LNA with Bypass + SP3T | 33 | 21 | 3.0 | 5.0 | 260 | QFN-16, 2.5×2.5×0.9 |
| | | ac | | | 20 | 1.8 | 5.0 | 240 | |
| LX5586 | 5.15–5.85 | n | PA + PDET + LNA with Bypass + SPDT | 27 | 17.0 | 3.0 | 3.3 | 200 | QFN-16, 2.5×2.5×0.4 |
| | | ac | | | 16.0 | 1.8 | 3.3 | 185 | |
| LX5586A | 5.15–5.85 | n | PA + PDET + LNA with Bypass + SPDT | 27 | 17.5 | 3.0 | 3.3 | 200 | QFN-16, 2.5×2.5×0.45 |
| | | ac | | | 16.5 | 1.8 | 3.3 | 185 | |
| LX5586H | 5.15–5.85 | n | PA + PDET + LNA with Bypass + SPDT | 27 | 20 | 3.0 | 5.0 | 230 | QFN-16, 2.5×2.5×0.45 |
| | | ac | | | 19 | 1.8 | 5.0 | 210 | |
| LX5589A | 5.15–5.85 | n | PA + Log DET + LNA with Bypass + SPDT | 30 | 18 | 3.0 | 3.3 | 210 | QFN-16, 2.5×2.5×0.9 |
| | | ac | | | 17 | 1.8 | 3.3 | 190 | |
| LX5589H | 5.15–5.85 | n | PA + Log DET + LNA with Bypass + SPDT | 32 | 22 | 3.0 | 5.0 | 250 | QFN-16, 2.5×2.5×0.9 |
| | | ac | | | 20 | 1.8 | 5.0 | 230 | |
| LX5589B | 5.15–5.85 | n | PA + Log DET + LNA with Bypass + SPDT | 32 | 22 | 3.0 | 5.0 | 250 | QFN-16, 3×3×0.9 |
| | | ac | | | 20 | 1.8 | 5.0 | 230 | |

## INTERFACE AND NETWORKING: Bluetooth® Modules

| Part # | Bluetooth Spec | Module Type | No Shield Option | Rx Sensitivity (dBm) | Power Output (dBm) (typ.) | Sleep | Profiles | Interface | Pin Count | Anthenna | Packages (Dimensions) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BM62 | 5.0 | Stereo Audio | Yes | –90 | 2 | – | HFP, HSP, A2DP, AVRCP, SPP | UART | 37 | PCB | 29 × 15 × 2.5 mm |
| BM63 | 5.0 | Stereo Audio | No | –89 | 2 | – | HFP, HSP, A2DP, AVRCP, SPP | UART | 48 | PCB | 32 × 15 × 2.5 mm |
| BM64 | 5.0 | Stereo Audio | Yes | –90 | 15 | – | HFP, HSP, A2DP, AVRCP, SPP | UART, I²C | 43 | PCB | 32 × 15 × 2.5 mm |
| BM20 | 5.0 | Audio | Yes | –91 | 4 | System Off 2 µA | HFP, HSP, A2DP, AVRCP, SPP, PCAP | Analog audio out, mic in, line in, UART | 40 | PCB | 29 × 15 × 2.5 mm |
| BM23 | 5.0 | Audio | Yes | –91 | 4 | System Off 2 µA | HFP, HSP, A2DP, AVRCP, SPP, PCAP | I²S Digital audio out, mic in, line in, UART | 43 | PCB | 29 × 15 × 2.5 mm |
| RN4870 | 5.0 | BLE | Yes | –90 | 0 | – | L2CAP, ATT, GATT, GAP, Integrated Public Profiles | UART, i²C | 33 | Chip | 22 × 12 × 2.4 mm |
| RN4871 | 5.0 | BLE | Yes | –90 | 0 | – | L2CAP, ATT, GATT, GAP, Integrated public profiles | UART, I²C, SPI | 16 | Chip | 11.5 × 9 × 2.1 mm |
| RN4678 | 5.0 | Data, Dual-Mode | Yes | –90 BR/EDR –92 LE | 2 | Deep Power Down 130 µA | BT3.0: GAP, SPP, SPD, RFCOMM, L2CAP BT4.2: GAP, GATT, ATT, SMP, L2CAP | UART, I²C | 33 | Chip, RF Pad | 22 × 12 × 2.4 mm |
| BM70 | 5.0 | Data, Single-Mode BLE | Yes | –90 | 0 | Power saving 1 µA | GAP, GATT, SM, L2CAP, Integrated public profiles | UART, I²C, SPI, ADC, PWM, GPIOs | 33 | Chip, RF Pad | 22 × 12 × 2.4 mm 25 × 12 × 1.8 mm |

## INTERFACE AND NETWORKING: Bluetooth® Modules

| Part # | Bluetooth Spec | Module Type | No Shield Option | Rx Sensitivity (dBm) | Power Output (dBm) (typ.) | Sleep | Profiles | Interface | Pin Count | Anthenna | Packages (Dimensions) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BM71 | 5.0 | Data, Single-Mode BLE | Yes | –90 | 0 | Power saving 1 µA | GAP, GATT, SM, L2CAP, Integrated public profiles | UART, I²C, SPI, ADC, PWM, GPIOs | 17 | Chip, RF Pad | 9 × 11.5 × 2.1 mm<br>6 × 8 × 1.6 mm |
| RN4020 | 4.1 | Data, Single-Mode BLE | No | –92.5 | 7 | Dormant < 700 nA, deep sleep < 5.0 µA | GAP, GATT, SM, L2CAP, integrated public profiles | UART, PIO, AIO, SPI | 24 | PCB | 11.5 × 19.5 mm |
| BM78 | 5.0 | Data, Dual-Mode | Yes | –90 (BR/EDR)<br>–92 LE | 2 | Deep Power Down 130 µA | BT3.0: GAP, SPP, SDP, RFCOMM, L2CAP<br>BT4.2: GAP, GATT, ATT, SMP, L2CAP | UART, I²C, GPIOs | 33 | Chip, RF Pad | 22 × 12 × 2.4 mm<br>25 × 12 × 1.8 mm |
| SAMB11-MR210CA | 5.0 | BLE | No | –95 | 1.15 µA | 2 µA | L2CAP, ATT, GATT, GAP, Integrated public profiles | UART, I²C, SPI | 39 | Chip | 22.88 × 15.36 mm |
| BTLC1000-MR110CA | 5.0 | BLE | No | –95 | 1.15 µA | 1 µA | L2CAP, ATT, GATT, GAP, Integrated public profiles | UART, I²C, SPI | 24 | Chip | 12.70 × 20.15 mm |

## INTERFACE AND NETWORKING: IEEE 802.15.4 zigbee® RF Transceiver Products

| Part # | Pin Count | Antenna | Frequency Range (GHz) | Sensitivity (dBm) | Power Output (dBm) | RSSI | Tx Power Consumption (mA) | Rx Power Consumption (mA) | Clock (MHz) | Sleep | MAC | MAC Features | Encryption | Interface | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MRF24J40 | 40 | – | 2.405 to 2.48 | –95 | 0 | Yes | 23 | 19 | 20 | 2 µA | Yes | CSMA-CA | AES128 | 4-wire SPI | 40-pin QFN |
| MRF24J40MA | 12 | PCB | 2.405 to 2.48 | –94 | 0 | Yes | 23 | 19 | 20 | 2 µA | Yes | CSMA-CA | AES128 | 4-wire SPI | 12/Module |
| MRF24J40MD | 12 | PCB | 2.405 to 2.48 | –104 | +19 | Yes | 140 | 32 | 20 | 10 µA | Yes | CSMA-CA | AES128 | 4-wire SPI | 12/Module |
| MRF24J40ME | 12 | U.FL | 2.405 to 2.48 | –104 | +19 | Yes | 140 | 32 | 20 | 10 µA | Yes | CSMA-CA | AES128 | 4-wire SPI | 12/Module |

## INTERFACE AND NETWORKING: Sub-GHz Transceivers/Modules

| Part # | Pin Count | Frequency Range (MHz) | Sensitivity (dBm) | Power Output (dBm) | RSSI | Tx Power Consumption (mA) | Rx Power Consumption (mA) | Clock (MHz) | Sleep | Interface | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MRF89XA | 32 | 868/915/950 | –113 | +12.5 | Yes | 25 mA @ +10 dBm | 3 | 12.8 MHz | 0.1 µA | 4-wire SPI | 32-pin TQFN |
| MRF89XAM8A | 12 | 868 | –113 | +12.5 | Yes | 25 mA @ +10 dBm | 3 | 12.8 MHz | 0.1 µA | 4-wire SPI | 12/Module |
| MRF89XAM9A | 12 | 915 | –113 | +12.5 | Yes | 25 mA @ +10 dBm | 3 | 12.8 MHz | 0.1 µA | 4-wire SPI | 12/Module |

## INTERFACE AND NETWORKING: Sub-GHz Transmitters

| Part # | Pin Count | Frequency Range (MHz) | Modulation | Data Rate (Kbps) | Tx Power (dBm) | Operating Voltage (V) | Packages |
|---|---|---|---|---|---|---|---|
| MICRF114 | 6 | 285–445 | OOK | 115.2 (NRZ),<br>57.6 (Manchester Encoded) | 10 | 1.8–3.6 | 6-pin SOT-23 |
| MICRF113 | 6 | 300–450 | ASK | 20 | 10 | 1.8–3.6 | 6-pin SOT-23 |
| MICRF112 | 10 | 300–450 | ASK/FSK | 50 (ASK), 10 (FSK) | 10 | 1.8–3.6 | 10-pin MSOP, 10-pin DFN |

## INTERFACE AND NETWORKING: Sub-GHz Receivers

| Part # | Pin Count | Frequency Range (MHz) | Modulation | Data Rate (Kbps) | Sensitivity (dBm) | RSSI | Rx Power Consumption (mA) | Sleep | Interface | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| MICRF219A | 16 | 300–450 | ASK/OOK | 20 | –110 | Yes | 4.3 | 15 µA | Serial Output | 16-pin QSOP |
| MICRF220 | 16 | 300–450 | ASK/OOK | 20 | –110 | Yes | 4.3 | N/A | Serial Output | 16-pin QSOP |
| MICRF221 | 16 | 850–950 | ASK/OOK | 10 | –109 | Yes | 9 | 15 µA | Serial Output | 16-pin QSOP |
| MICRF229 | 16 | 400–450 | ASK/OOK | 20 | –112 | Yes | 6 | 15 µA | Serial Output | 16-pin QSOP |
| MICRF230 | 16 | 400–450 | ASK/OOK | 20 | –112 | Yes | 6 | N/A | Serial Output | 16-pin QSOP |

## INTERFACE AND NETWORKING: MCU Transmitters

| Part # | Pin Count | Frequency Range (MHz) | Program Memory (Bytes) | EEPROM (bytes) | RAM (bytes) | Digital Timer | Watch Dog Timer | Max Speed (MHz) | ICSP | Modulation | Data Rate (kbps) | Output Power (dBm) | Operating Voltage (V) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIC12F529T39A | 6 | 310–928 | 2.3K | 64 | 201 | 1 | 1 | 8 | Yes | OOK/FSK | 100 | 10 | 2.0–3.7 | 14-pin TSSOP |
| PIC12LF1840T39A | 6 | 310–928 | 7.1K | 256 | 256 | 2 | 1 | 32 | Yes | OOK/FSK | 100 | 10 | 1.8–3.6 | 14-pin TSSOP |
| PIC16LF1824T39A | 20 | 310–928 | 4K | 256 | 256 | 1 | 1 | 32 | Yes | OOK/FSK | 100 | 10 | 1.8–3.6 | 20-pin TSSOP |
| rfPIC12F675F | 6 | 380–450 | 1.7K | 128 | 64 | 1 | 1 | 20 | Yes | ASK/FSK | 40 | 10 | 2.0–5.5 | 20-pin SSOP |
| rfPIC12F675H | 6 | 850–930 | 1.7K | 128 | 64 | 1 | 1 | 20 | Yes | ASK/FSK | 40 | 10 | 2.0–5.5 | 20-pin SSOP |
| rfPIC12F675K | 6 | 290–350 | 1.7K | 128 | 64 | 1 | 1 | 20 | Yes | ASK/FSK | 40 | 10 | 2.0–5.5 | 20-pin SSOP |

## INTERFACE AND NETWORKING: USB Bridge Devices

| Part # | USB Speed | USB Compliant | PHY | MCU Interface | Tx/Rx Buffer Size (bytes) | Number of GPIO | Operating Voltage (V) | Packages |
|---|---|---|---|---|---|---|---|---|
| MCP2200 | Full-Speed USB (12 Mb/s), Low-Speed USB (1.5 Mb/s) | Yes | Yes | UART | 128/128 | 8 | 2.7 to 5.5 | 20-pin SOIC, 20-pin TSSOP, 20-pin QFN |
| MCP2210 | Full-Speed USB (12 Mb/s), Low-Speed USB (1.5 Mb/s) | Yes | Yes | SPI | 64 | 9 | 3.3 to 5.5 | 20-pin SOIC, 20-pin TSSOP, 20-pin QFN |
| MCP2221 | Full-Speed USB (12 Mb/s), Low-Speed USB (1.5 Mb/s) | Yes | Yes | I²C | 64 | 4 | 3.0 to 5.5 | 14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin QFN |

## INTERFACE AND NETWORKING: USB Products

| Part # | Description | Processor Interface | # of Downstream Ports | Card Formats | Industrial Version | Packages |
|---|---|---|---|---|---|---|
| **USB Hub Controllers** | | | | | | |
| USB2412 | Hi-Speed USB 2.0 2-Port Hub | USB 2.0 | 2 | – | – | 28-pin QFN |
| USB2422 | Small-footprint, 2-Port Value Hub, Commercial and Industrial Temperature with USB Battery Charging 1.1 | USB 2.0 | 2 | – | ✓ | 24-pin QFN |
| USB251XB/ USB2517 | Hi-Speed USB 2.0 Hub with Battery Charger Detection | USB 2.0 | 2, 3, 4, 7 port options | – | ✓, Automotive | 36 or 64-pin QFN |
| USB2524 | 4-Port Hi-Speed USB 2.0 Multi-Switch Hub | USB 2.0 × 2 | 4 | – | – | 56-pin QFN |
| USB3503 | 3-Port Hi-Speed USB 2.0 HSIC Hub for Mobile Applications | HSIC | 3 | – | ✓ | 25-ball WLCSP |
| USB3803 | 3-Port Hi-Speed USB 2.0 Hub for Mobile Applications | USB 2.0 | 3 | – | ✓ | 25-ball WLCSP |
| USB3X13 | 3-Port Hi-Speed USB 2.0 Smart Hub for Mobile Applications | USB 2.0 or HSIC | 3 (USB 2.0 ×2/HSIC ×1) | – | ✓ | 30-ball WLCSP |
| USB253X | Hi-Speed USB 2.0 Controller Hub with Battery Charger Detection | USB 2.0 | 2, 3, 4 port options | – | ✓ | 36-pin QFN |
| USB46X4 | Hi-Speed USB 2.0 Controller Hub with USB and HSIC Interfaces | USB 2.0 or HSIC | 4 (USB 2.0 ×4 or USB 2.0 ×2/HSIC ×2) | – | ✓, Automotive | 48-pin QFN |
| USB553XB | SuperSpeed USB 3.0 Hub with Battery Charger Detection | USB 3.0 | 2, 3, 4 or 7 port options | – | ✓ | 64 or 72-pin QFN |
| USB5734 | SuperSpeed USB 3.1 Gen1 Smart Hub Controller with I/O Bridging and FlexConnect | USB 3.1 Gen1 | 4 | – | ✓, Automotive | 64-pin QFN |
| USB5744 | SuperSpeed USB 3.1 Gen1 Small Form Factor Hub Controller | USB 3.1 Gen1 | 4 | – | ✓ | 56-pin QFN |
| **USB-C™ Power and Charging** | | | | | | |
| UTC200X | USB-C Controller | I/O | 1 DFP or 1 UFP | – | ✓, Automotive | 16-pin QFN |
| **USB Transceivers/Switches** | | | | | | |
| USB333X | Mobile Hi-Speed USB 2.0 Transceiver with Multi-frequency Support | ULPI | – | – | ✓ | 25-ball WLCSP |
| USB334X | Hi-Speed USB 2.0 Transceiver with Multi-frequency Support | ULPI | – | – | Automotive | 24 or 32-pin QFN |
| USB3300 | Hi-Speed USB 2.0 Transceiver (24 MHz reference clock support) | ULPI | – | – | ✓ | 32-pin QFN |
| USB3740B | Hi-Speed USB 2.0 Switch with Extremely Low Power | USB 2.0 | – | – | ✓ | 10-pin QFN |
| USB375XA-X | Hi-Speed USB 2.0 Port Protection with Switch and Charger Detection | USB 2.0 | – | – | ✓ | 16-pin QFN |

## INTERFACE AND NETWORKING: USB Products (Continued)

| Part # | Description | Processor Interface | # of Downstream Ports | Card Formats | Industrial Version | Packages |
|---|---|---|---|---|---|---|
| **USB Flash Media Controllers** | | | | | | |
| USB224X | Hi-Speed USB 2.0 Multi-Format Flash Media Controller | USB 2.0 | – | SD™/MMC/eMMC™/MS/xD | ✓ | 36-pin QFN |
| USB225X | Hi-Speed USB 2.0 Multi-Format Flash Media Controller | USB 2.0 | – | SD/MMC/eMMC/MS/xD/CF | ✓ | 128-pin VTQFP |
| USB264X | Hi-Speed USB 2.0 Multi-Format Flash Media Hub Controller | USB 2.0 | 2 | SD/MMC/eMMC/MS/xD | ✓ (Automotive) | 48-pin QFN |
| USB2660 | Hi-Speed USB 2.0 Multi-Format Flash Media Hub Controller | USB 2.0 | 2 | SD/MMC/eMMC/MS/xD (×2) | ✓ | 64-pin QFN |
| USB4640 | Hi-Speed USB 2.0 Multi-Format Flash Media HSIC Hub Controller | HSIC | 2 | SD/MMC/eMMC/MS/xD | ✓ | 48-pin QFN |
| **USB Security** | | | | | | |
| SEC1110 | Smart Card Controller | USB 2.0 | – | Smart Card | ✓ | 16-pin QFN |
| SEC1210 | Smart Card Controller with Multi-Interface Support | USB 2.0 | – | Smart Card ×2 | ✓ | 24-pin QFN |

## INTERFACE AND NETWORKING: Real-Time Clock/Calendar (RTCC)

| Bus | Product | Pins | Timing Features | | | | Memory[1] | | | Power | | Unique Features[2] | 5 ku Pricing† | Packages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Digital Trimming (Adj./Range) | Alarm Settings | WDT | Outputs | SRAM (Bytes) | EEPROM (Kbits) | Protected EEPROM (bits) | Min $V_{CC}$ | Min $I_{BAT}$ | | | |
| I²C | MCP7940M | 8 | ±127 ppm | 1 sec. | – | $\overline{IRQ}$/CLK | 64 | 0 | 0 | 1.8 | – | – | $0.46 | SOIC (SN), TSSOP (ST), MSOP (MS), TDFN (MNY), PDIP (P) |
| | MCP7940N | 8 | ±127 ppm | 1 sec. | – | $\overline{IRQ}$/CLK | 64 | 0 | 0 | 1.8 | 1.3 | Power Fail Timestamp | $0.59 | SOIC (SN), TSSOP (ST), MSOP (MS), TDFN (MNY), PDIP (P) |
| | MCP7940X | 8 | ±127 ppm | 1 sec. | – | $\overline{IRQ}$/CLK | 64 | 0 | 64 | 1.8 | 1.3 | Power Fail Timestamp | $0.66 | SOIC (SN), TSSOP (ST), MSOP (MS), TDFN (MNY) |
| | MCP7941X | 8 | ±127 ppm | 1 sec. | – | $\overline{IRQ}$/CLK | 64 | 1 | 64 | 1.8 | 1.3 | Power Fail Timestamp | $0.72 | SOIC (SN), TSSOP (ST), MSOP (MS), TDFN (MNY) |
| SPI | MCP7951X | 10 | ±255 ppm | 0.01 sec. | – | $\overline{IRQ}$/CLK | 64 | 1 | 128 | 1.8 | 1.3 | Power Fail Timestamp | $0.90 | SOIC (SL), TSSOP (ST) |
| | MCP7952X | 10 | ±255 ppm | 0.01 sec. | – | $\overline{IRQ}$/CLK | 64 | 2 | 128 | 1.8 | 1.3 | Power Fail Timestamp | $0.96 | MSOP (MS), TDFN (MN) |
| | MCP795W1X | 14 | ±255 ppm | 0.01 sec. | ✓ | 1. CLK, 2. $\overline{IRQ}$, 3. WDT RST | 64 | 1 | 128 | 1.8 | 1.3 | Power Fail Timestamp, Event Detects (× 2) | $1.22 | SOIC (SL), TSSOP (ST) |
| | MCP795W2X | 14 | ±255 ppm | 0.01 sec. | ✓ | 1. CLK, 2. $\overline{IRQ}$, 3. WDT RST | 64 | 2 | 128 | 1.8 | 1.3 | Power Fail Timestamp, Event Detects (× 2) | $1.28 | SOIC (SL), TSSOP (ST) |

**Note 1:** All part numbers with an "X" have three protected EEPROM programming options: [0 = Blank ID], [1 = EUI-48™ MAC Address], [2 =EUI-64™ MAC Address]

**2:** The Power Fail Timestamp in all RTCCs occur at Battery Switchover.

# CO AND SMOKE DETECTOR ICS

## CO AND SMOKE DETECTOR ICS: Photoelectric Smoke Detector ICs

| Part # | Horn Driver Alarm Pattern | Alarm Memory | Low Battery Detection | Chamber Test | Alarm Interconnect | Sensitivity Timer | Internal POR | Alternate Diagnostic Mode | Operating Temp. Range (°C) | Packages |
|---|---|---|---|---|---|---|---|---|---|---|
| RE46C140 | NFPA Temporal | No | Yes | Yes | Yes | Yes | Yes | – | –25 to +75 | 16-pin PDIP, 16-pin SOIC |
| RE46C141 | NFPA Temporal | No | Yes | Yes | Yes | – | Yes | – | –25 to +75 | 16-pin PDIP, 16-pin SOIC |
| RE46C143 | Continuous Tone | No | Yes | Yes | Yes | – | Yes | – | –25 to +75 | 16-pin PDIP, 16-pin SOIC |
| RE46C144 | Continuous Tone | No | Yes | Yes | Yes | Yes | Yes | – | –25 to +75 | 16-pin PDIP, 16-pin SOIC |
| RE46C145 | NFPA Temporal | No | Yes | Yes | Yes | Yes | Yes | Yes | –25 to +75 | 16-pin PDIP, 16-pin SOIC |
| RE46C165 | NFPA Temporal | Yes | Yes | Yes | Yes | Yes | Yes | Yes | –25 to +75 | 16-pin PDIP, 16-pin SOIC |
| RE46C166 | Continuous Tone | Yes | Yes | Yes | Yes | Yes | Yes | Yes | –25 to +75 | 16-pin PDIP, 16-pin SOIC |
| RE46C167 | NFPA Temporal | Yes | Yes | Yes | Yes | Yes | Yes | Yes | –25 to +75 | 16-pin PDIP, 16-pin SOIC |
| RE46C168 | Continuous Tone | Yes | Yes | Yes | Yes | Yes | Yes | Yes | –25 to +75 | 16-pin PDIP, 16-pin SOIC |
| RE46C190 | NFPA Temporal or Continuous Tone | Yes | Yes | Yes | Yes | Yes | Yes | – | –10 to +60 | 16-pin SOIC |
| RE46C191 | NFPA Temporal or Continous Tone | Yes | Yes | Yes | Yes | Yes | Yes | No | –10 to +60 | 16-pin SOIC |
| RE46C200 | NFPA Temporal or Continous Tone | Yes | Yes | Yes | Yes | Yes | Yes | No | –10 to +60 | 16-pin PDIP, 16-pin SOIC |

## CO AND SMOKE DETECTOR ICS: Ionization Smoke Detector ICs

| Part # | Horn Driver Alarm Pattern | Alarm Memory | Low Battery Detection | Reverse Battery Protection | Alarm Interconnect | Hush Timer | Power-up Low Battery Test | Operating Temp. Range (°C) | Packages |
|---|---|---|---|---|---|---|---|---|---|
| RE46C120 | NFPA Temporal or Continuous Tone | No | Yes | Yes | – | – | – | –10 to +60 | 16-pin PDIP |
| RE46C121 | NFPA Temporal | No | Yes | Yes | Yes | – | – | –10 to +60 | 16-pin PDIP |
| RE46C122 | NFPA Temporal | No | Yes | Yes | Yes | Yes | Yes | –10 to +60 | 16-pin PDIP |
| RE46C126 | Continuous Tone | No | Yes | Yes | Yes | – | – | –10 to +60 | 16-pin PDIP |
| RE46C127 | Continuous Tone | No | Yes | Yes | Yes | Yes | Yes | –10 to +60 | 16-pin PDIP |
| RE46C128 | NFPA Temporal | No | Yes | Yes | Yes | – | Yes | –10 to +60 | 16-pin PDIP |
| RE46C129 | Continuous Tone | No | Yes | Yes | Yes | – | Yes | –10 to +60 | 16-pin PDIP |
| RE46C152 | NFPA Temporal or Continuous Tone | No | Yes | Yes | Yes | Yes | Yes | –10 to +60 | 16-pin PDIP |
| RE46C162 | NFPA Temporal or Continuous Tone | Yes | Yes | Yes | Yes | Yes | Yes | –10 to +60 | 16-pin PDIP |
| RE46C163 | NFPA Temporal or Continuous Tone | Yes | Yes | Yes | Yes | Yes | Yes | –10 to +60 | 16-pin PDIP |
| RE46C180 | NFPA Temporal or Continuous Tone | Yes | Yes | No | Yes | Yes | Yes | –10 to +60 | 16-pin PDIP, 16-pin SOIC |

## CO AND SMOKE DETECTOR ICS: Ionization Smoke Detector Front Ends

| Part # | Microprocessor Compatible Output | Output Options | Typical Application | Operating Temperature Range (°C) | Packages |
|---|---|---|---|---|---|
| RE46C112 | Yes | $V_{OUT}$ 1/4 of $V_{DD}$ or $V_{OUT}$ 1/4 of Detect Input | 3V or 3.3V Microprocessor | –10 to +60 | 8-pin PDIP |
| RE46C114 | Yes | $V_{OUT}$ 1/2 of $V_{DD}$ or $V_{OUT}$ 1/2 of Detect Input | 5V Microprocessor | –10 to +60 | 8-pin PDIP |
| RE46C311 | Yes | Op Amp | Ionization Smoke Detector Front End | –10 to +60 | 8-pin PDIP, 8-pin SOIC |
| RE46C312 | Yes | Op Amp | Ionization Smoke Detector Front End | –10 to +60 | 8-pin PDIP, 8-pin SOIC |

## CO AND SMOKE DETECTOR ICS: CO Detectors

| Part # | Operating Voltage ($V_{DC}$) | Voltage Regulator ($V_{DC}$) | LED Driver | Horn Driver | Interconnect | Low Battery Detection | Brown Out | Boost Regulator | Op Amp Vos Max (µV) | Op Amp Ib Max (pA) | Op Amp GBWP (kHz) | Op Amp Aol (dB) | Op Amp Slew Rate (V/µS) | Op Amp Unity Gain Stable | Op Amp CMRR Min (dB) | Op Amp Rail-to-Rail | Operating Temp. Range (°C) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RE46C800 | 2 to 12 | 3.3 | Yes | Yes | Yes | Yes | Yes | Yes | 1000 | 200 | 10 | 115 | 0.003 | Yes | 80 | In/Out | –10 to +60 |

| CO AND SMOKE DETECTOR ICS: Piezoelectric Horn Drivers | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Part # | Operating Voltage (V) | LED Driver | Voltage Regulator (V) | Low Battery Detection | Interconnect | Power Good | Operating Temp. Range (°C) | Packages |
| RE46C100 | 6 to 16 | – | – | – | – | – | –40 to +85 | 8-pin PDIP, 8-pin SOIC |
| RE46C101 | 6 to 16 | Yes | – | – | – | – | –40 to +85 | 8-pin PDIP, 8-pin SOIC |
| RE46C104 | 4 to 8 | – | – | – | – | – | 0 to +50 | 14-pin PDIP, 14-pin SOIC |
| RE46C105 | 6 to 12 | Yes | 3.3 or 5 | Yes | – | – | –40 to +85 | 14-pin PDIP, 14-pin SOIC |
| RE46C107 | 2 to 5 | Yes | 3 or 3.3 | Yes | – | – | 0 to +50 | 16-pin PDIP, 16-pin SOIC |
| RE46C108 | 6 to 12 | – | 3.3 or 5 | – | – | – | –40 to +85 | 8-pin PDIP, 8-pin SOIC |
| RE46C109 | 6 to 12 | – | 3 | Yes | Yes | Yes | –40 to +85 | 16-pin PDIP, 16-pin SOIC |
| RE46C117 | 2 to 5 | – | – | – | – | – | 0 to +50 | 8-pin PDIP, 8-pin SOIC |
| RE46C119 | 6 to 12 | – | 3 | Yes | Yes | Yes | –40 to +85 | 16-pin PDIP, 16-pin SOIC |
| RE46C317 | 2 to 5 | – | – | – | – | – | –10 to +60 | 8-pin PDIP, 8-pin SOIC |
| RE46C318 | 2 to 5 | – | – | – | – | – | –10 to +60 | 8-pin PDIP, 8-pin SOIC |

# ULTRASOUND

| ULTRASOUND: High-Voltage Analog Multiplexers | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Part # | # of Ch. and Configuration | Bleed Resistor | $V_{P-P}$ | $R_{ON}$ (Ω) | $C_{SG}$ On/Off (pF) | $I_{SW}$ (A) | Features | Packages |
| HV20220 | 8 SPST | No | 200V | 22 | 38/12 | 3 | 5V–12V Logic Input, 5 MHz clock frequency | 48-Lead LQFP, 28-Lead PLCC |
| HV20320 | 8 SPST | No | 200V | 22 | 38/12 | 3 | 5V–12V Logic Input, 5 MHz clock frequency | 48-Lead LQFP |
| HV232 | 8 SPST | Yes | 200V | 22 | 38/12 | 3 | 5V–12V Logic Input, 5 MHz clock frequency | 48-Lead LQFP, 28-Lead PLCC |
| HV219 | 8 SPST | No | 200V | 11 | 50/20 | 3 | 5V–12V Logic Input, 5 MHz clock frequency | 48-Lead LQFP, 28-Lead PLCC |
| HV2201 | 8 SPST | No | 200V | 22 | 38/12 | 3 | 3.3V–5V Logic input, 20 MHz clock frequency | 48-Lead LQFP, 28-Lead PLCC |
| HV2301 | 8 SPST | Yes | 200V | 22 | 38/12 | 3 | 3.3V–5V Logic input, 20 MHz clock frequency | 48-Lead LQFP, 28-Lead PLCC |
| HV2221 | 8 SPST | No | $V_{PP}$ range = +15V to +50V, $V_{NN}$ range = –190V to –225V | 15 | 70/18 | 4 | 3.3V–5V Logic input, 20 MHz clock frequency | 48-Lead LQFP |
| HV2321 | 8 SPST | Yes | $V_{PP}$ range = +15V to +50V, $V_{NN}$ range = –190V to –225V | 15 | 70/18 | 4 | 3.3V–5V Logic input, 20 MHz clock frequency | 48-Lead LQFP |
| HV209 | 6 × 2:1 Mux | Yes | 200V | 22 | 38/12 | 3 | 5V–12V Logic Input, 5 MHz clock frequency | 48-Lead LQFP |
| HV20822 | 2 Banks of 8 channel | No | 220V | 22 | 38/12 | 3 | 5V–12V Logic Input, 5 MHz clock frequency | 48-Lead LQFP |
| HV238 | 2 Banks of 8 channel | Yes | 220V | 22 | 38/12 | 3 | 5V–12V Logic Input, 5 MHz clock frequency | 48-Lead LQFP |
| HV2601 | 16 SPST | No | 200V | 22 | 38/12 | 3 | 3.3V–5V Logic input, 20 MHz clock frequency | 48-Lead LQFP, 42-Ball Bumped Die (BD) |
| HV2701 | 16 SPST | No | 200V | 22 | 38/12 | 3 | 3.3V–5V Logic input, 20 MHz clock frequency | 48-Lead LQFP, 42-Ball Bumped Die (BD) |
| HV2605 | 16 SPST | No | 200V | 22 | 13/10 | 3 | 3.3V–5V Logic input, 20 MHz clock frequency | 48-Lead LQFP, 42-Ball Bumped Die (BD) |
| HV2705 | 16 SPST | Yes | 200V | 22 | 13/10 | 3 | 3.3V–5V Logic input, 20 MHz clock frequency | 48-Lead LQFP, 42-Ball Bumped Die (BD) |
| HV2631 | 2 Banks of 8 channel | No | 220V | 22 | 38/12 | 2 | 3.3V–5V Logic input, 20 MHz clock frequency | 48-Lead LQFP |
| HV2731 | 2 Banks of 8 channel | Yes | 220V | 22 | 38/12 | 2 | 3.3V–5V Logic input, 20 MHz clock frequency | 48-Lead LQFP |
| HV2803 | 32 SPST | No | ±6V | 10 | 27/9 | 3 | 3.3V Input Logic, 66 MHz Clock Frequency | 132-ball TFBGA 12 x 12 mm |
| HV2903 | 32 SPST | Yes-2 | ±6V | 10 | 27/9 | 3 | 3.3V Input Logic, 66 MHz Clock Frequency | 132-ball TFBGA 12 x 12 mm |
| HV2904 | 32 SPST | Yes-1 | ±6V | 10 | 27/9 | 3 | 3.3V Input Logic, 66 MHz Clock Frequency | 132-ball TFBGA 12 x 12 mm |
| HV2070 | 32 SPST | No | ±6V | 4.5 | 20/11 | 3.7 | 3.3V Input Logic, 66 MHz Clock Frequency | 132-ball TFBGA 10 x 10 mm |
| HV2733 | 8 SPDT | Yes | 200V | 22 | 38/12 | 2 | 3.3V–5V Logic input, 20 MHz clock frequency | 48-Lead LQFP |
| HV2661 | 8 × 3:1 Mux | No | 200V | 22 | 30/9 | 2 | 3.3V–5V Logic input, 20 MHz clock frequency | 48-Lead LQFP |
| HV2761 | 8 × 3:1 Mux | Yes | 200V | 22 | 30/9 | 2 | 3.3V–5V Logic input, 20 MHz clock frequency | 48-Lead LQFP |
| HV2662 | 24 SPST | No | 200V | 22 | 12/9 | 2 | 3.3V–5V Logic input, 20 MHz clock frequency | 64-Ball VFBGA |
| HV2762 | 24 SPST | Yes | 200V | 22 | 12/9 | 2 | 3.3V–5V Logic input, 20 MHz clock frequency | 64-Ball VFBGA |
| HV2808 | 2 Banks of 16 SPDT | No | 200V | 22 | 23/9 | 3 | 3.3V–5V Logic, A/B bar Control pin | 56-Lead QFN |
| HV2809 | 2 Bank of 16 | No | 200V | 22 | 23/9 | 3 | 3.3V -5V Logic, A/B bar + EN Control pins | 56-Lead QFN |
| HV2801 | 16 × 2:1 Mux | No | 200V | 22 | 23/9 | 3 | 3.3V–5V Logic input, 20 MHz clock frequency | 64-Lead QFN |
| HV2901 | 16 × 2:1 Mux | Yes | 200V | 22 | 23/9 | 3 | 3.3V–5V Logic input, 20 MHz clock frequency | 64-Lead QFN |
| HV2802 | 32 SPST | No | 200V | 22 | 13/10 | 3 | 3.3V–5V Logic input, 20 MHz clock frequency | 9 × 9 VFBGA |
| HV2902 | 32 SPST | Yes | 200V | 22 | 13/10 | 3 | 3.3V–5V Logic input, 20 MHz clock frequency | 9 × 9 VFBGA |

## ULTRASOUND: Ultrasound MOSFET Drivers

| Part # | # of Channels | Input Voltage Min. (V) | Input Voltage Max. (V) | Ouput Voltage Bipolar (V) | Output Voltage Unipolar (V) | Output Rise/ Fall Time | Peak Current | Application Circuit | Packages |
|---|---|---|---|---|---|---|---|---|---|
| MD1210 | 2 | 1.2 | 5.0 | NA | 0–12 | 6 ns/6 ns | ±2A | Pair with 1 × TC6320 | 4 × 4 mm 12-lead QFN |
| MD1211 | 2 | 1.8 | 5.0 | NA | 0–12 | 10 ns/10 ns | ±2A | Pair with 1 × TC6320 | 8-Lead SOIC |
| MD1213 | 2 | 1.8 | 5.0 | ±5 | 0–12 | 6 ns/6 ns | ±2A | Pair with 1 × TC6320 | 4 × 4 mm 12-lead QFN |
| MD1711 | 12 | 1.8 | 3.3 | NA | 0–12 | 8 ns/8 ns | ±2A | Pair with 6 × TC6320 to form a 2-Channel 5-Level Pulser | 7 × 7 mm 48-Lead LQFP, 7 × 7 mm 48-Lead QFN |
| MD1712 | 12 | 1.8 | 3.3 | NA | 0–12 | 8 ns/8 ns | ±2A | Pair with 6 × TC6320 to form a 2-Channel 5-Level Pulser | 7 × 7 mm 48-Lead LQFP, 7 × 7 mm 48-Lead QFN |
| MD1715 | 12 | 1.8 | 3.3 | NA | 0–12 | 6.5 ns/6.5 ns | ±2A | Pair with 1 × TC8020 to form a 2-Channel 5-Level Pulser | 6 × 6 mm 40-Lead QFN |
| MD1716 | 12 | 1.8 | 3.3 | NA | 0–12 | 6.5 ns/6.5 ns | ±2A | Pair with 1 × TC8020 to form a 3-Channel 3-Level Pulser | 6 × 6 mm 40-Lead QFN |
| MD1810 | 4 | 1.8 | 5 | ±5 | 0–12 | 6 ns/6 ns | ±2A | Pair with 2 × TC6320 to form a 1-Channel 4-Level Pulser/2 Channel 2 Level Pulser/1 Channel 3 Level Pulser | 4 × 4 mm 16-Lead QFN |
| MD1811 | 4 | 1.8 | 5 | ±5 | 0–12 | 6 ns/6 ns | ±2A | Pair with 2 × TC6320 to form a 2-Channel 2-Level Pulser | 4 × 4 mm 16-Lead QFN |
| MD1812 | 5 | 1.8 | 5 | ±5 | 0–12 | 6 ns/6 ns | ±2A | Pair with 1 × TC6320 and 1 × TC2320 to form a 1-Channel 3-Level Pulser | 4 × 4 mm 16-Lead QFN |
| MD1813 | 5 | 1.8 | 5 | ±5 | 0–12 | 6 ns/6 ns | ±2A | Pair with 1 × TC6320 and 1 × TC2320 to form a 1-Channel 3-Level Pulser | 4 × 4 mm 16-Lead QFN |
| MD1820 | 4 | 1.8 | 5 | ±5 | 0–12 | 7 ns/7 ns | ±2A | Pair with 2 × TC6320 to form a 1-Channel 4-Level Pulser/2-Channel 2 Level Pulser/1 Channel 3 Level Pulser | 4 × 4 mm 16-Lead QFN |
| MD1821 | 4 | 1.8 | 5 | ±5 | 0–12 | 7 ns/7 ns | ±2A | Pair with 2 × TC6320 to form a 2-Channel 2-Level Pulser | 4 × 4 mm 16-Lead QFN |
| MD1822 | 4 | 1.8 | 5 | ±5 | 0–12 | 7 ns/7 ns | ±2A | Pair with 2 × TC6320 to form a 1-Channel 3Level Pulser | 4 × 4 mm 16-Lead QFN |

## ULTRASOUND: Ultrasound TR Switches

| Part # | # of Channels | Noise (per √Hz) | Features | Packages |
|---|---|---|---|---|
| MD0100 | 1/2 | 0.7 nV/√Hz | ±100V Ultrasound T/R Switches | SOT-89, 4 × 4 8-pin DFN |
| MD0101 | 4 | 0.8 nV/√Hz | ±100V Ultrasound T/R Switches with Clamp Diode | 5 × 5 18-pin DFN |
| MD0105 | 4 | 0.8 nV/√Hz | ±130V Ultrasound T/R Switches | 5 × 5 18-pin DFN |

## ULTRASOUND: Arbitrary Waveform Generators

| Part # | Output | Sampling Frequency | Features | Packages |
|---|---|---|---|---|
| MD2131 | Push-Pull Source Drive | 250 MHz | 8-bit DAC, 48-step phase, PWM, 8-bit Apodization DAC | 5 × 5 40-pin QFN |
| MD2134 | Push-Pull Source Drive | 250 MHz | 8-bit DAC, 7-bit PAM, 16-Level | 5 × 5 40-pin QFN |

## ULTRASOUND: Ultrasound Transmitters

| Part # | Output Voltage (V) | Output Current (A) | Number of Channels | Features | Packages |
|---|---|---|---|---|---|
| HV748 | ±75 | ±1.25 | 4 | 4-Channel 2-Level RTZ | 48-pin QFN 7 × 7 mm |
| HV7360 | ±100 | ±2.5 | 1 or 2 | 1-Channel 3-Level or 2-Channel 2-Level | 22-pin BGA 5 × 7 mm |
| HV7361 | ±100 | ±2.5 | 1 or 2 | 1-Channel 3-Level or 2-Channel 2-Level with integrated T/R | 22-pin BGA 5 × 7 mm |
| HV7355 | 150 | ±1.5 | 8 | 8-Channel Unipolar Active RTZ | 48-pin QFN 7 × 7 mm |
| HV7350 | ±60 | ±1.0 | 8 | 8-Channel 3-Level | 56-pin QFN 8 × 8 mm |
| HV7351 | ±70 | ±3.0 | 8 | 8-Channel 3-Level with Built-in Digital Beamformer | 80-pin QFN 11 × 11 mm |
| HV7321 | ±80 | ±2.5 | 4 | 4-Channel 5-level RTZ, HD2 –44 dB @ 5 MHz | 64-pin VQFN 9 × 9 mm |
| HV7322 | ±80 | ±2.0 | 8 | 8-Channel 7-level with dual T/R | 206-ball TFBGA 12 × 12 mm |
| HV7358 | ±80 | ±1.6 | 16 | 16-Channel 3-Level with Built-in Digital Beamformer and T/R | 168-ball TFBGA 13 × 13 mm |

# Featured Analog Development Tools

***For a complete list of development tools, please visit www.microchip.com/development tools.***

## Thermal Management Products

### MCP9600 Evaluation Board (ADM00665)

The MCP9600 Evaluation Board is used to digitize the Thermocouple EMF voltage to degree Celsius with ±1.5°C accuracy. You can easily evaluate all device features using a Type K thermocouple. The device also supports Types J, T, N, E, B, S and R. Each of these types are evaluated by replacing the Type K Thermocouple connector with the corresponding connectors (not included).

### Thermocouple Reference Design (TMPSNSRD-TCPL1)

This reference design demonstrates how to instrument a thermocouple and accurately sense temperature over the entire thermocouple measurement range. This solution uses the MCP3421 18-bit Analog-to-Digital Converter (ADC) to measure voltage across the thermocouple.

## Sensor Products

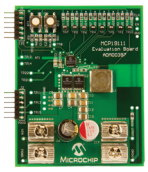
### Linear Sensor Kit (LXK3301AL003)

This 100 mm linear position sensor evaluation kit comes will all you need to test out inductive technology for a linear sensor. The kit includes a 100 mm linear sensor evaluation board, a programmer that is run from our Integrated Programming and Calibration Environment (IPCE) GUI and applicable cables.

### Rotary Sensor Kit (LXK3301AR001)

This 18 mm 120° rotary position sensor evaluation kit comes will all you need to test out inductive technology for a rotary sensor. The kit includes a rotary position sensor evaluation board, a programmer that is run from our Integrated Programming and Calibration Environment (IPCE) GUI and applicable cables.

## Power Management Products



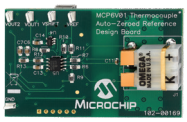
### MCP19111 Evaluation Board (ADM00397)

The MCP19111 is a digitally-enhanced PWM controller. It combines a pure-analog PWM controller with a supervisory MCU making it a fast, cost-effective and configurable power conversion solution. The MCP19111 is ideal for standard power conversion, LED drivers and battery charging applications. This board demonstrates how the device operates in a synchronous buck topology over a wide input voltage and load range.

### MCP16251 and MCP1640B Synchronous Boost Converters Evaluation Board (ADM00458)

This board demonstrates the MCP16251/MCP1640B in two boost-converter applications with multiple output voltages and was developed to help reduce product design cycle time. Three common output voltages can be selected: 2.0V, 3.3V and 5.0V.

## Linear Products



### MCP6V01 Thermocouple Auto-Zeroed Reference Design Board (MCP6V01RD-TCPL)

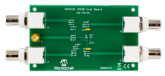
The MCP6V01 design board demonstrates how to use a difference amplifier system to measure Electromotive Force (EMF) voltage at the cold junction of thermocouple to accurately measure temperature of the thermocouple bead. This can be done by using the MCP6V01 auto-zeroed op amp because of its ultra-low offset voltage ($V_{OS}$) and high Common Mode Rejection Ratio (CMRR).

### MCP6N16 Evaluation Board (ADM00640)

This board is designed to provide an easy and flexible platform when evaluating the MCP6N16, a zero-drift instrumentation amplifier designed for low-voltage operation featuring rail-to-rail input and output performance. The board is populated with the MCP6N16-100, which is optimized for gains for 100V/V or higher.

*For a complete list of development tools, please visit www.microchip.com/development tools.*

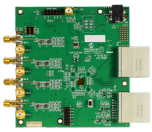
## Linear Products (Continued)



### MCP6421 EMIRR Evaluation Board (ADM00443)

The MCP6421 EMIRR Evaluation Board is intended to support the Electromagnetic Interference Rejection Ratio (EMIRR) measurement and to show the Electromagnetic Interference (EMI) rejection capability of the MCP6421 op amp.

## Mixed Signal Products



### MCP37X3X-200 16-bit 200 Msps ADC VTLA Evaluation Board (ADM00505)

This board provides the opportunity to evaluate the performance of the MCP37X3X-200 device family. With the on-board MCP37D31-200 16-bit 200 Msps pipelined ADC, it allows you to evaluate the functionality of the 16-bit 200 Msps ADCs and the digital signal processing features. With the help of a compatible data capture card, the evaluation board can provide you with performance analysis features through the PC GUI.

### PAC1921 High-Side Power and Current Monitor Evaluation Board (ADM00592)

The PAC1921 is a dedicated power monitoring device with a configurable analog output. This device is unique in that all power-related information is available on the 2-wire/I²C-compatible interface and power, current or voltage is available on the analog output. This evaluation board provides you with the means to exercise device functionality while connected either to target systems or while utilizing on-board sources.

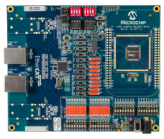
### MCP39F511 Power Monitor Demonstration Board (ARM00667)

The MCP39F511 Power Monitor Demonstration Board is a fully functional single-phase power monitor and energy monitoring system. The system calculates and displays active power, reactice power, RMS current, RMS voltage, active energy (both import and export) and four quadrant reactive energy. The Power Monitor Utility Software enables you to easily experiment with all system configuration settings such as zero-cross detection, PWM output frequencies, event configurations and calibration setup.

## Interface Products

### UCS81003 Evaluation Board (ADM00561)

This board provides the ability to evaluate the features of the UCS81003 Automotive USB Port Power Controller with Charger Emulation. It allows the UCS81003 to be tested in different configurations by populating jumpers on specific header locations. The Evaluation Board contains the MCP2221 USB to I²C bridge, which allows communication via USB between the UCS81003 and the GUI running on the PC.

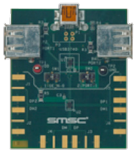


### LAN9252 EtherCAT® Slave Controller Evaluation Kit with HBI PDI Interface (EVB-LAN9252-HBI)

This kit is a standalone platform to develop an EtherCAT slave device. It offers flexibility to explore different host bus interfaces such as 8-bit and 16-bit parallel bus, SPI and SQI™.

### LAN874X 10/100 Ethernet Transceiver with EEE and Wake-On-LAN (EVB8740)

The EVB8740 is a PHY evaluation board for our LAN874X family, which integrates Energy Efficient Ethernet and Wake-on-LAN features. It interfaces to a MAC controller via a standard MII or RMII interface.



### USB3740 Hi-Speed USB 2.0 2-Port Switch (EVB-USB3740)

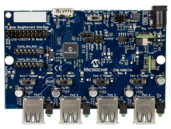
The EVB-USB3740 is used to evaluate our USB3740 USB 2.0 compliant 2-port switch. Some applications require a single USB port to be shared with other functions. The USB3740 is a small and simple 2-port switch providing system design flexibility.

***For a complete list of development tools, please visit www.microchip.com/development tools.***

## Interface Products (Continued)

### UTC2000 Basic USB Type-C™ Controller Evaluation Kit (EVK-UTC2000)

The EVK-UTC2000 is a complete kit to evaluate our UTC2000 basic USB-C controller. It includes a downstream-facing port dongle which can connect to any standard host, an upstream-facing port board to mimic a USB-C device, as well as a USB-C cable.

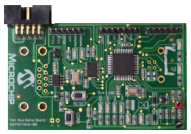


### USB5734 USB 3.1 Gen1 Controller Hub Evaluation Board (EVB-USB5734)

This board is a demonstration and evaluation platform that provides the necessary requirements and interface options for evaluating the USB5734 Smart Hub on a 4-layer RoHS-compliant PCB. This will allow you to gain an understanding of the product and accelerate integration into your design.

### USB5926 USB 3.1 Gen1 Smart Hub with 2:1 USB-C MUX Evaluation Board (EVB-USB5926)

This board demonstrates implementation of USB Type-C ports using Microchip's UTC2000 CC pin interface controller and the USB5926's built-in 2:1 Muxes. The board supports two downstream facing USB Type-C ports along with an upstream facing USB Type-C port. The USB5926 also supports two additional downstream Type A ports for legacy purposes.



### MCP2515 CAN Bus Monitor Demo Board (MCP2515DM-BM)

The MCP2515 CAN Bus Monitor Demo board kit contains two identical boards that can be connected together to create a simple two-node Controller Area Network (CAN) bus, which can be controlled and/or monitored via the included PC interface. The board(s) can also be connected to an existing CAN bus.

### USB to UART Converter Evaluation Board (MCP2200EV-VCP)

The MCP2200EV-VCP is a USB-to-RS232 development and evaluation board for the MCP2200 USB-to-UART device. The board allows for easy demonstration and evaluation of the MCP2200. The accompanying software allows the special device features to be configured and controlled. The board is powered from USB and has a test point associated with each GPIO pin. In addition, two of these pins are connected to LEDs which can be used to indicate USB-to-UART traffic when the associated pins are configured as TxLED and RxLED pins respectively.

## Support

Microchip is committed to supporting its customers in developing products faster and more efficiently. We maintain a worldwide network of field applications engineers and technical support ready to provide product and system assistance. For more information, please visit www.microchip.com:

- Technical Support: www.microchip.com/support
- Evaluation samples of any Microchip device: www.microchip.com/sample
- Knowledge base and peer help: www.microchip.com/forums
- Sales and Global Distribution: www.microchip.com/sales

## Training

If additional training interests you, Microchip offers several resources including in-depth technical training and reference material, self-paced tutorials and significant online resources.

- Overview of Technical Training Resources: www.microchip.com/training
- MASTERs Conferences: www.microchip.com/masters
- Developer Help Website: www.microchip.com/developerhelp
- Technical Training Centers: www.microchip.com/seminars

## Sales Office Listing

### AMERICAS

**Atlanta, GA**
Tel: 678-957-9614
**Austin, TX**
Tel: 512-257-3370
**Boston, MA**
Tel: 774-760-0087
**Chandler, AZ (HQ)**
Tel: 480-792-7200
**Chicago, IL**
Tel: 630-285-0071
**Dallas, TX**
Tel: 972-818-7423
**Detroit, MI**
Tel: 248-848-4000
**Houston, TX**
Tel: 281-894-5983
**Indianapolis, IN**
Tel: 317-773-8323
Tel: 317-536-2380
**Los Angeles, CA**
Tel: 949-462-9523
Tel: 951-273-7800
**Raleigh, NC**
Tel: 919-844-7510
**New York, NY**
Tel: 631-435-6000
**San Jose, CA**
Tel: 408-735-9110
Tel: 408-436-4270
**Canada - Toronto**
Tel: 905-695-1980

### EUROPE

**Austria - Wels**
Tel: 43-7242-2244-39
**Denmark - Copenhagen**
Tel: 45-4450-2828
**Finland - Espoo**
Tel: 358-9-4520-820
**France - Paris**
Tel: 33-1-69-53-63-20
**Germany - Garching**
Tel: 49-8931-9700
**Germany - Haan**
Tel: 49-2129-3766-400
**Germany - Heilbronn**
Tel: 49-7131-67-3636
**Germany - Karlsruhe**
Tel: 49-721-62537-0
**Germany - Munich**
Tel: 49-89-627-144-0
**Germany - Rosenheim**
Tel: 49-8031-354-560

### EUROPE

**Israel - Ra'anana**
Tel: 972-9-744-7705
**Italy - Milan**
Tel: 39-0331-742611
**Italy - Padova**
Tel: 39-049-7625286
**Netherlands - Drunen**
Tel: 31-416-690399
**Norway - Trondheim**
Tel: 47-7289-7561
**Poland - Warsaw**
Tel: 48-22-3325737
**Romania - Bucharest**
Tel: 40-21-407-87-50
**Spain - Madrid**
Tel: 34-91-708-08-90
**Sweden - Gothenberg**
Tel: 46-31-704-60-40
**Sweden - Stockholm**
Tel: 46-8-5090-4654
**UK - Wokingham**
Tel: 44-118-921-5800

### ASIA/PACIFIC

**Australia - Sydney**
Tel: 61-2-9868-6733
**China - Beijing**
Tel: 86-10-8569-7000
**China - Chengdu**
Tel: 86-28-8665-5511
**China - Chongqing**
Tel: 86-23-8980-9588
**China - Dongguan**
Tel: 86-769-8702-9880
**China - Guangzhou**
Tel: 86-20-8755-8029
**China - Hangzhou**
Tel: 86-571-8792-8115
**China - Hong Kong SAR**
Tel: 852-2943-5100
**China - Nanjing**
Tel: 86-25-8473-2460
**China - Qingdao**
Tel: 86-532-8502-7355
**China - Shanghai**
Tel: 86-21-3326-8000
**China - Shenyang**
Tel: 86-24-2334-2829
**China - Shenzhen**
Tel: 86-755-8864-2200
**China - Suzhou**
Tel: 86-186-6233-1526
**China - Wuhan**
Tel: 86-27-5980-5300
**China - Xiamen**
Tel: 86-592-2388138
**China - Xian**
Tel: 86-29-8833-7252

### ASIA/PACIFIC

**China - Zhuhai**
Tel: 86-756-321-0040
**India - Bangalore**
Tel: 91-80-3090-4444
**India - New Delhi**
Tel: 91-11-4160-8631
**India - Pune**
Tel: 91-20-4121-0141
**Japan - Osaka**
Tel: 81-6-6152-7160
**Japan - Tokyo**
Tel: 81-3-6880-3770
**Korea - Daegu**
Tel: 82-53-744-4301
**Korea - Seoul**
Tel: 82-2-554-7200
**Malaysia - Kuala Lumpur**
Tel: 60-3-7651-7906
**Malaysia - Penang**
Tel: 60-4-227-8870
**Philippines - Manila**
Tel: 63-2-634-9065
**Singapore**
Tel: 65-6334-8870
**Taiwan - Hsin Chu**
Tel: 886-3-577-8366
**Taiwan - Kaohsiung**
Tel: 886-7-213-7830
**Taiwan - Taipei**
Tel: 886-2-2508-8600
**Thailand - Bangkok**
Tel: 66-2-694-1351
**Vietnam - Ho Chi Minh**
Tel: 84-28-5448-2100

5/15/19

MICROCHIP

**www.microchip.com**

Microchip Technology Inc. | 2355 W. Chandler Blvd. | Chandler AZ, 85224-6199



DS20001060AU

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- View TC1186-2.6VCT713 on WIN SOURCE
- Microchip Technology Information

## Optimize Your Supply Chain with WIN SOURCE Solutions

- Global Sourcing Solution
- Obsolete Management
- Cost Control Management
- Shortage Management
- Alternative Solution
- Excess Inventory Management